The Builder.

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The Planning of Ornament.

THIS is the title of the second of the two very interesting and admirably illustrated little books which have been brought out by Mr. Lewis F. Day, as expositions of the method and principle of the branch of art in which he is an expert;* we take it as our title here, since it really includes the subject of both books, for the "anatomy of pattern," as Mr. Day entitles the first work, is really a consideration of the plan upon which ornamental diapers are or may be constructed.

We use with intent the words "are or may be constructed," because the book on the anatomy of pattern is rather too apt to convey to a thoughtless reader an idea that systematic repetition is an essential, or even necessary, quality of diaper ornament, which is most certainly not the case. On the contrary, systematic repetition of parts at equal distances in surface ornament of this type is only an absolute necessity in a commercial sense, in order to enable us to print a decorative diaper to cover large spaces at a reasonable cost; and without such an arrangement much very charming decorative work which is in use in wall-papers and tiles would be commercially out of the question, and such decoration could only be used by a wealthy minority. Mr. Day in several passages in his book insists upon this fact, that cost of production is an important element in the matter of pattern designing for mechanical reproduction by printing; but he hardly sufficiently emphasises the fact that this artificial repetition at regular distances is, in regard to some forms of diaper ornament, in reality a defect forced upon us by the necessity of the saving of labour, and not by any means a merit or a beauty in the design; and that, in fact, as Mr. Day appears now and then to wish his reader to remember, the main object in designing many of the higher forms of repeating pattern is to elude the appearance of the repetition, and to cheat the eye, by complicating and covering up the skeleton lines of the pattern, into an impression that there is no repetition, and that the ornament is drawn with a free hand over the whole surface. It is true that the book is entitled "The Anatomy of Pattern," and pattern undoubtedly means a repeated ornament; but though all pattern is ornament, all ornament is not pattern. Mr. Day, of course, knows this as well as we do; but on page 3 of his Introduction he uses "ornament" and "pattern" as interchangeable terms, which is certainly misleading to the unwary. He observes that the popular idea of the process of ornamental design is, that "the artist has only to sit down before a piece of paper and like a spider spin out the fancies that may crowd his fertile imagination"; whereas, he goes on to say, "ornament is patiently built up on lines inevitable to its consistency"; and "just as the physiologist divides the animal world according to anatomy, into families and classes, so the ornamentist is able to classify all pattern work according to its structure." So he is; but all ornament is not pattern-work, a great deal of it is so, undoubtedly, and some of it is essentially so. Many of the simple forms used in geometrical diaper ornament only become ornamental at all by being regularly spaced and connected according to a geometrical plan. Squares, triangles, circles, diamonds, and one or two other simple and elementary geometrical forms, which taken singly are not in themselves ornament, become ornament as soon as they are arranged symmetrically over a space according to a definite system; and by alternating their colours, or shades, and still more by artfully cutting off and intercepting some of their main lines, ornamental patterns of a high degree of richness and elaboration may be formed out of these simple materials, as is notably the case with many varieties of Saracenic ornament. Mr. Day illustrates this part of his subject by numerous diagrams, very fully and clearly, and shows the general reader (what every one who has at all studied the subject knows) how very simple are really the geometrical bases of those interlacing Moorish patterns which present, at first sight, such a puzzle to the eye, and which have such a rich and beautiful decorative effect. The apparent elaboration and real simplicity of the decorative patterns of this class are well brought out in the illustration, of which we give, by Mr. Batsford's permission, a reduced repetition (fig. 1), and in all patterns of this class, in which the details themselves are all geometrical forms, geometrical arrangement is a *sine quâ non*. Without that they would be nothing but a fortuitous collection of atoms, and would lose all their decorative character. This is well shown in a Japanese example given in plate 22 of "The Planning of Ornament," in which the Japanese craftsman produces what he thinks a piquant effect by ornamenting various parts of a surface by bits of geometrical diaper of different kinds stuck in quite irregularly in broken patches (fig. 2). Mr. Day says this is, "at all events, amusing. One does not readily grasp all that is in it. There is always something to find out, which is just what there would not be in a simple and orderly geometric pattern of the European type." We think this is a false piece of criticism. There is nothing to find out at all in this jumble; it is a jumble and nothing more, and, to our thinking, is simply barbarous in effect, however it may be the fashion to admire it at present, and it is an absolute contradiction to the principles which the author has been laying down in "The Anatomy of Pattern."

But the case is different in working out a design in which the minor details are not geometrical forms. In this case there is no absolute necessity for geometrical arrangement and spacing in order to produce the idea of ornament; the forms themselves are, or should be, ornamental independently of their collocation. In this case, what is required is that the design should be well balanced in line, with curves (if the lines are curved) tangential in their growth from one another, and that it should fill up evenly the space which it is intended to cover, neither crowding one portion nor leaving a gap in another. Now in designing flowing and semi-naturalistic ornament of this type, there is no artistic necessity that it should be laid out in regularly-repeated sections at regularly-spaced intervals. If we take the conventional foliage ornament on some of the Greek vases of the best period, we find that while the ornament fills up the surface, and is a purely decorative type of design, there is in many cases no symmetrical repetition in it. What is applicable to the side of a vase is, on principle, applicable equally to the whole side of a room; but, no doubt, the difficulty of making a design to cover the whole side of a room without repetition is greater in proportion as the area is increased, and a designer might be very likely to divide up the area into parallelograms or geometrical spaces of some kind merely in order to facilitate dealing with it. Apart from this, however, the division into sections is only a necessity of economical production.

Taking such a design as in fig. 3, which is one of the designs given in illustration of "The

* The Anatomy of Pattern. By Lewis F. Day. Illustrated. London: B. T. Batsford. 1887.
The Planning of Ornament. By Lewis F. Day. Illustrated. London: B. T. Batsford. 1887.

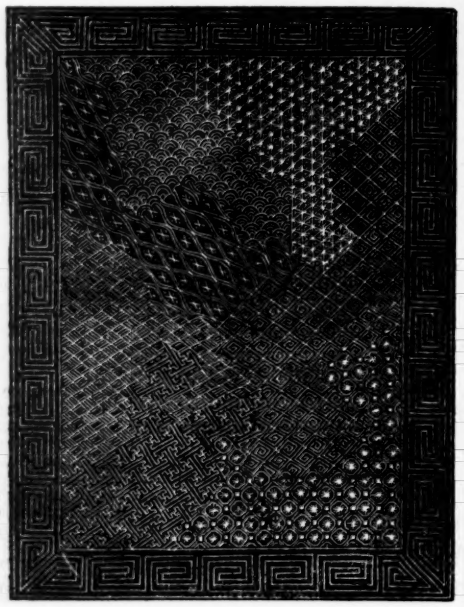

Fig. 2.

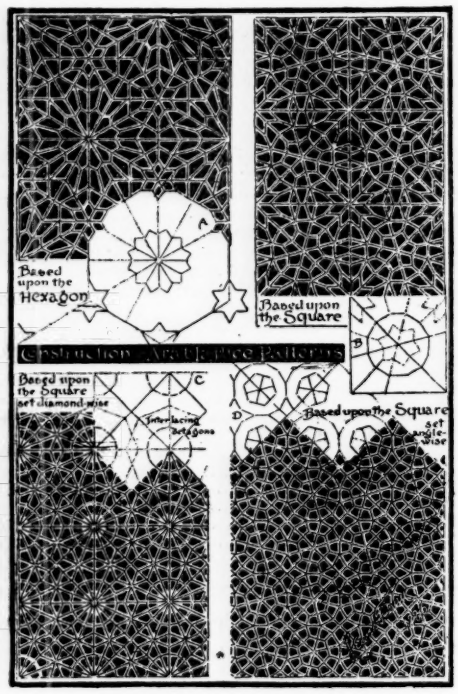
Based upon the Hexagon
Based upon the Square
Based upon the Square set diamond-wise
Interlacing Octagons
Based upon the Square set angle-wise

Fig. 1.

Fig. 3.

Anatomy of Pattern" (and in which, by the way, the curves are hardly all they should be in purity of line), the essential quality of a design of that type is entire freedom; it is a decorative design consisting of a conventionalised representation of natural growth. It is laid out here so as to repeat in sections, because only so can it be printed as a wall paper with the requisite economy of production, but it is no advantage to it artistically to be made to repeat; on the contrary, it would be far better if it could be drawn out with entire freedom and with continual variation, so long as a general balance was preserved. The design is, in fact, specially arranged as what Mr. Day calls a "drop pattern," *i.e.*, one in which each repeat is joined on at a different level from the last one, so as to get rid of the chance of horizontal lines forming too prominently, through the repetition of leading features: that is to say, that special means are taken to disguise as much as possible the fact of repetition; and yet the author speaks throughout his book as if repetition were an essential quality of decorative design, whereas it is only an essential quality of design for mechanical multiplication. We noticed the other day a Japanese vase at South Kensington, entirely covered with a very delicate floral spray ornament, involving no repetition,—merely the same character of leafage carried completely over the surface. Would this only be ornament if the design were regularly arranged in repeats? or would the accompanying bit of Scandinavian ornament (fig. 4), from the doorway of which there is a model in the architectural court at South Kensington, be more truly ornamental work if the grotesque bird form were solemnly repeated at regular distances? We do not forget that Mr. Day's book is about "patterns," but we complain that he leads readers to suppose that "pattern" is identical with "ornament," which it is not; it is only one form of ornament.

Apart from this the book is a most useful one to students of pattern designing, giving a very clear analysis of the subject and an ample amount of illustration. General readers will like it for the illustrations. Whether they will care about the method of constructing patterns, or whether their enjoyment of pattern designs will be at all enhanced by knowing more about the scaffolding with which these are built, are points on which there may be different opinions.

The book on the "Planning of Ornament" deals professedly with the question of the manner in which ornament not necessarily recurring may be distributed, the manner in which we may proceed to filling up a space, the use of the border, how the central field may invade the border, or the border may cut into the field with good effect. With the general tone of the remarks we are quite in accordance. Of course this is a side of the subject which has not by any means such a scientific basis as the "Anatomy of Pattern," and is not capable of the same "positivist" treatment; it is rather a matter of suggestions and of taste. The chief value of the book is really in the illustrations, many of which are charming in themselves, and admirable as suggestions of what may be done, of various styles of design and treatment, and of starting points from which new ideas may be worked out. Some designs given incidentally for the decoration of doors and wooden panelling appear to us, we confess, somewhat common-

Fig. 4.

place in idea; well enough to do, but not to publish; but these are the minority. We must also entirely take exception to the comparison between the Japanese and Greek in the following sentence, "When a Japanese artist cuts a panel quaintly in two, after the manner of plate 33, and treats each part of it as it seems good to his own queer mind, he is only doing what the Greek did when he cut off a portion of his wall space, and treated it as a frieze; though he does it more energetically, not to say spasmodically, and with less appreciation of grace." He is doing nothing of the kind. The Japanese example referred to is a parallelogram of which one portion is occupied by paintings of storks, the other by a small geometrical diaper, which, in the characteristic Japanese fashion, cuts across the field with a zigzag diagonal line having no reference to anything in the shape or distribution of the surface treated. To compare this with the division of the Greek entablature into frieze and architrave is simply nonsense. The latter division is a completely structural and logical one, the architrave being the principal constructive member of the style, and the cornice the overhanging of the roof, also for constructive reasons; the frieze is a wall-space left between these two important constructive features, not a slice arbitrarily cut off from the surface of the building to be decorated, and Mr. Day ought to have a better knowledge of architecture than such a remark would imply.

HISTORICAL NOTES ON SOUTHWELL CATHEDRAL.

THE Finga-Ceaster of times remote, and since known as Sudwell, or Suwelle, from its famous springs, the township of Southwell lies low in the valley of the Trent, by the western bank of the Greet, a tributary of that river. On Easter-day, A.D. 627, Eadwin, of Deira, son of Ælla, king of Northumbria, was baptised in a wooden church at York by Paulinus. The king's former consort had been a Mercian princess; his second wife was Æthelburgha, daughter to Æthelbercht and Berctha, of Kent. Emulating her mother's piety, Æthelburgha had carried Paulinus in her suite, and with his aid subsequently effected the conversion of her husband. Paulinus was appointed archbishop of the metropolitan see at York. That see, the most ancient in England, having been originally founded by King Lucius *circa* 180 A.D., had been overthrown by the heathen Saxons, but was revived by Pope Gregory the Great. Eadwin had built the little wooden fane shortly before his admission into the faith. Ten years later it was replaced by a fabric of stone, which in its turn was rebuilt by Archbishop Albert, *circa* 780 A.D. Four years did not elapse after the king's baptism before the new archbishop founded a collegiate church of St. Mary at Southwell. The site lay in the midst of the Marches, which Pendha, having slain in battle Eadwin, and then Oswald, king of Deira, established as the great kingdom of Mercia. It was a Mercian king, Peadha, his son, who in or about 650 A.D. set up an abbey of St. Peter at Medehamstede, on the river Nene, in the fen country, in what was for a long while the diocese of Lincoln. Of Peadha's abbey, the last abbot, John Chambers, was made (1541) first bishop of the then newly-

created see at Peterborough. But the most potent ruler in Mercia was Offa, ally and friend of Charles the Great, and founder of a monastery in the birthplace of the first British martyr,—a monastery that also has been transformed into the cathedral church of St. Alban. After Offa's death in 796 A.D. his extensive province gradually lost pre-eminence, owing to a succession of civil wars, and was ultimately reduced to vassalage by Ecbercht, king of Wessex. Its last titular sovereign, Keowulph, was deposed by the Danes in 877 A.D.

Southwell Minster was surrendered to the Crown at the Dissolution, when its revenues were assessed at 516*l.* 1s. 6½d. per annum. But in 1543 King Henry VIII. re-endowed the church with the larger part of its pristine possessions, lying chiefly in Normanton and Southwell, and appointed Richard Cox, afterwards removed to Ely, as bishop. Nevertheless, Edward VI. dissolved the chapter and made a grant of the estates to the Duke of Northumberland. After the duke's sentence and execution the property was restored by Queen Mary, whose charter was subsequently confirmed, in turn, by her two successors on the throne,—*teste* an inscription on the "Lee's" pillar (Gervase Lee) in the nave. In the Conqueror's time the body ecclesiastical comprised ten prebends, to which number six were afterwards added. Each prebend had a vicar choral, the Archbishop of York being sole patron. In 1216 Archbishop Walter Gray constituted the prebends with their vicars into a college. The college buildings,—re-erected in 1780,—stood originally on the eastern Greet Brookside. These were afterwards replaced by others in the churchyard, wherein stood also the house of the chauntry priests, as is set forth in the White Book of Southwell. The collegiate establishment of a rector (nominated by the Bishop of Lincoln), one minor canon, together with an organist, six lay clerks, and eight choristers, is, of course, subject to modification upon the development of a scheme in terms of the Bishoprics Act of 1878. That statute made provision for re-forming the peculiar of Southwell, and the erecting, by order in Council, of an independent see, whereof Dr. Ridding is now bishop. For the uses of the new diocese the bishop suffragan of Nottingham purchased the remains of the old palace, together with its gardens and part of the park, some 4½ acres in all. This palace,—formerly the residence of the archbishops of York, and a favourite home of Cardinal Wolsey,—stands within 100 ft. southwards of the church. It was originally built by John Kempe, archbishop 1425-1452, and completed by his successors, William Booth, and other prelates. Four parks appertained to the palace in the days of its prosperity. These were situated within a radius of five miles, at Little Park, Norwood, Hexgrave, and Hockerwood. The palace formed a large quadrangular building, having a chapel, and, on the northern side, a fine banqueting-hall of Henry VI.'s day.

A building erected during the middle of the thirteenth century by the south-western transept formerly served as a singing school or chauntry. The upper floor is used for the treasury; in the lower portion is stored the library. Herein were preserved the "White Book of Southwell"; a register of the St. Peter's Priory of Austin Canons, which Ralph de Ayncourt founded at Thurgarton, Nottinghamshire, *circa* 1130; and some ancient muniments appertaining to Southwell and covering the period between the eleventh and sixteenth centuries.

On the 11th of November, 1711, a violent storm raged in this district. The lightning struck and sorely damaged the south-western tower's spire, consumed part of the nave roof and central cross-tower, and destroyed the organ and the bells. The latter were hung in the central tower and were successors to the two bells presented by Alfric, archbishop of York, 1023–1050; the organ, by Father Schmidt, was repaired in 1766, by Snetzler. A singular history attaches to an ancient lectern which Sir R. Kaye gave to the Minster. He bought it in a watchmaker's shop at Nottingham, whither it had passed at the sale of the fifth Lord Byron's effects in 1798. The lectern had been dragged up out of the lake at Newstead Abbey. On its being taken to pieces for repairs the hollow standard was found to contain a number of parchment scrolls, grants, &c., belonging to the abbey. These, it is conjectured, had been stored therein by the monks for concealment and preservation. The lectern is inscribed: "Orate pro anima Radulphi Savage et pro animabus omnium fidelium defunctorum." That Lord Byron's successor, the poet, passed much of his boyhood at the Manor House at Burgage, in Southwell.

This church was so long connected with the See of York that it is not surprising to find as many as six archbishops have been interred within its walls. Their names and dates of burial are as follow: Geoffrey de Ludeham, 1264; an altar-tomb, with headless figure, removed from its first position, but still in the choir; Thomas de Corbridge, 1303; and Robert Holgate, 1545 (the brasses no longer over their tombstones); William Booth, 1464, and his brother, Laurence Booth, 1480, in the southern aisle; and Edwin Sandys, 1588, whose large altar-tomb, with a recumbent figure in alabaster, was taken out of the choir into the northern transept. The Minster's dimensions have been given as,—total internal length, 315 ft.; nave, 143 ft. by 66 ft.; total length of two chief transepts, 126 ft.; central tower, 40 ft. square at its base and 116 ft. high.

For many years past Southwell Minister has been in the hands of the Ecclesiastical Commissioners, in so far as the maintenance of the building is concerned. The damage suffered in the storm of 1711 was partly made good at a cost of 4,000*l.*; the western towers were, later, strengthened and underpinned. In 1851 the Commissioners employed Mr. Ewan Christian to survey and to report upon the fabric. The repairs made under his direction extended over nearly twenty-four years. They have been mainly carried out by two masons, whose names we gladly record,—John Cook and John Gregory,—inasmnch as Mr. Christian bears generous tribute to the rare single-hearted zeal and devotedness which they bestowed upon their handiwork. In 1875 a supplementary report was sent in by the Commissioners' instructions. In terms thereof the spires, which had been taken down in 1802, have been restored to the two western towers; the roof, together with the floor and interior fittings of the chapter-house made good; and the roofs rebuilt of the nave, aisles, and transepts. Mr. Clipsham, of Norwell, builder, contracted for the two spires and the re-roofing. Messrs. Cornish and Gaymer, of North Walsham, have made new screens and stalls for the choir; as also the new flooring, in stone and marble. But in the direction of such interior decorations as these much remains still to be done, for which it is hoped that public contributions will be forthcoming. On the 2nd inst. the church was re-opened for divine service, with all due solemnity, by the Archbishop of Canterbury.

We gave a long description of the architectural features of the Minster, now the Cathedral of Southwell, in the *Builder* for September 18, 1880, together with a plate of details from the chapter-house, from sketches by the present editor of this journal.

THE LATE M. QUESTEL, ARCHITECT.

ON Wednesday, the 1st of February, there took place at the Cimetière du Nord, Paris, the funeral of the late eminent French architect, Charles Auguste Questel, whose death we briefly announced in our last number. Four discourses were pronounced over his grave, before a numerous audience representing the Institute of France, the Ecole des Beaux-Arts, the artistic world of Paris generally, and more especially the architects, a large number of whom attended to pay the last honours to one of the oldest and most respected members of the profession in France. M. Jules Comte, "Directeur des Bâtiments Civils," spoke in the name of the Government; M. Henri Delaborde in the name of the Institut of France; M. Bouguereau attended and spoke in place of M. Bailly, who was prevented from attending, and who should have spoken in the name of the Société Centrale des Architectes, the Caisse de Défense Mutuelle des Architectes, the Société Libre des Artistes Français, and the Royal Institute of British Architects; and M. Pascal, architect of the Bibliothèque Nationale, spoke for the old pupils of M. Questel. From these speeches might be gleaned a considerable amount of information as to M. Questel's long and busy career, which we are able to supplement also by other information.

M. Questel was born at Paris, September 19th, 1807, and was a student at the École des Beaux-Arts and a pupil of Peyre (the younger), Blouet, and Duban, all members of the Institut. He entered on work under the Government as early as 1826, as a supernumerary superintendent of works in connexion with the Sorbonne. M. Questel's probation under the department of Administration des Bâtiments Civils, in which he was at a future day to occupy a high position, was a long one. He was first sub-inspector at the Institut and the Collège de France under Lebas, then "deuxième Inspecteur" at the Ecole des Beaux-Arts under the direction of Duban, and lastly Inspecteur in the department of the Ministre de l'Intérieur, or "Home Secretary" (as we should say) under Moreau; and it was not till after twenty-two years of service, in 1848, that he became architect for the Palace at Compiègne, and in 1849, for the Palace of Versailles and the two Trianons. At Versailles, M. Questel restored the principal apartments and the chapel, and built the State staircase: all works which bear witness to his refined taste and his knowledge of the architectural styles of France in the seventeenth and eighteenth centuries, and the conscientious care with which he endeavoured, without servile copying, to assimilate the new work to the spirit of the old. We may mention, at the same time, his restoration of the sumptuous "Galerie Dorée" of the Bank of France, by whom he was called in to undertake this work.

Having been appointed in 1854 a temporary member of the Conseil des Bâtiments Civils, M. Questel, in 1862, succeeded M. Caristie as Inspector-General; and in 1872, after the death of Lefuel, was appointed Vice-President of the Council before named, which takes so important a part in the regulation of great public works in France. After having been a member of this important body, in one capacity or another, for more than thirty years, M. Questel compiled a historical notice of the Conseil des Bâtiments Civils and its work, since its creation in 1795, up to 1886.

M. Questel had visited Italy several times, and had been much interested, *en route*, with the ancient Roman remains of the South of France, and also with the Romanesque architecture which assumes such a special and marked character in that district of France. Having been attached to the "Commission des Monuments Historiques" since its formation, he turned special attention to this interesting class of building, and the archives of the Commission contain his interesting studies and reports on the Pont-du-Gard near Nîmes, the amphitheatre and theatre at Arles, and other similar monuments. Some of these studies were sent by the Government to one of the International Exhibitions at South Kensington, that in 1874; and we remember noticing them with the greatest interest at the time, and commenting on the splendid manner in which the water-colour drawings of these ancient buildings were executed. M. Questel about the same period restored the Church of St. Pierre d'Ainay at Lyons, and the basilica of St. Philibert at Tournus. He was for some time architect to the diocese of Nîmes, but it was the towns of Nîmes and Grenoble which furnished him with the best opportunities for the display of his talent, in the Church of St. Paul and the Esplanade fountain at Nîmes (the former falling to him as the result of a public competition in 1839), and in the important public buildings built by him at Grenoble, from 1864 to 1872, the Library

and Museum and the Hôtel de Prefecture. At Gisors a hospital of admirable design displays his ability in another class of building; and at Paris, in the great establishment called the "Asile Sainte-Anne," he showed how sanitary and scientific knowledge could be combined with refined taste in design.

In 1855 M. Questel succeeded, mainly at the instance of the students, to the position of director of what had been the *atelier* Gilbert, as the successor to MM. Houet and Gilbert, and under his direction, firm but always kind and liberal, the *atelier* flourished exceedingly, more than any other, and became a kind of centre of meeting for young students of architecture from all parts; and many of his pupils distinguished themselves both in the competitions of the École des Beaux-Arts and in later successes gained in the course of professional practice.

M. Questel was a member of the Institut of France (succeeding, in 1874, his former master, Duban), and was, since 1872, an honorary and corresponding member of the Royal Institute of British Architects. He had been President of the Société Centrale des Architectes, and was the first President of the Caisse de Défense Mutuelle. He had received medals of honour in various Exhibitions, both French and foreign, and was an officer of the Legion of Honour, and also of the department of Public Instruction. He had been a member of many juries in connexion with art departments of important exhibitions, and served in that capacity in connexion with the English Exhibition of 1862.

NOTES.

AS will be seen by the reports which appear in our pages this week, feeling allusions to Mr. Godwin's death have been made at meetings of the Royal Institute of British Architects, the Architectural Association, and the Association of Public Sanitary Inspectors, and by the Professor of Architecture at University College. Numerous kindly references to Mr. Godwin's life and work have also appeared in the Press. The movements which Mr. Godwin aided were so multifarious that we may perhaps be pardoned for having omitted to mention, in our memoir of him last week, one or two in which he took especial interest. Firstly, then, we wish to recall the fact that Mr. Godwin took a very warm interest in the affairs of the Architects' Benevolent Society, of which he was of late years a trustee. Through his efforts and munificence, the funded property of that Society was considerably increased two or three years ago. With this increase of funded property the usefulness of the Society was correspondingly increased, but, even as it is, we fear that its means are all too small to adequately meet the many claims which are now made on it.* Another society of which Mr. Godwin was an old and liberal supporter is the Artists' Benevolent Fund, of which he was Vice-President. This society, established in 1810, consists of two separate and distinct branches, "The Artists' Annuity Fund," and "The Artists' Benevolent Fund." The Annuity Fund was established for the purpose of affording to artists an opportunity of making provision for their own relief in sickness or in superannuation: "It neither asks for nor receives any support from the public, but is raised, and wholly supported, by the contribution of its members," according to an actuarial table. "All artists in painting, sculpture, architecture, and engraving, under forty-five years of age," are eligible to become members. The "Benevolent Fund" is "for the relief of the widows and orphans of the members of the Annuity Fund," and is supported by the voluntary contributions of the patrons of the fine arts and artists, "and by the annual contributions of the members of the Annuity Fund." It was this feature of "self-help" which especially commended itself to Mr. Godwin's practical mind. The Builders' Benevolent Institution was another society in whose welfare Mr. Godwin took great interest, and some years ago he was the means of greatly increasing the funds of that Institution, giving largely himself and inciting others to do likewise. One more society of the same class in which Mr. Godwin took much interest was the Provident Institution of Builders' Foremen and Clerks of Works. Mention was made in our last of Mr. Godwin's collection of "historic chairs." A great many of these were illustrated and described in the *Builder* for 1878 (March 30 and Dec. 7). The *Sunday Times*, in noticing Mr. Godwin's death, expresses the hope that these chairs "will be kept together for the benefit of the nation." As a matter of detail, it appears that the medal given by the Institute for Mr. Godwin's essay on Concrete was a silver, not a gold medal. It was the first medal of any kind ever given by the Institute. We may further add that we have received several letters from men of high standing in the Profession expressing their regret that they were unavoidably prevented from showing their respect for Mr. Godwin's memory by attending at his funeral; and some of the winners of the Godwin Bursary have written to us in very feeling terms as to what they owe to him for the establishment of that incitement to practical study.*

* Since this was written, we hear that Mr. Godwin has bequeathed £100 to the Society.

* We regret that in our mention of Mr. Godwin's funeral, the name of Mr. Richard A. Godwin (the senior surviving brother) was omitted from the list of relatives who attended.

MR. BUCKINGHAM POPE, writing to the *Standard*, proposes to settle the Railway Rates question,—and, incidentally, to partially solve the "unemployed" problem as well,—by the construction of a national railway. This is a bold suggestion, and, looking at a railway map of the country, the proposition seems to come rather late in the day; but the writer's idea is that the trading classes should have a railway of their own, and thus substitute a genuine rivalry in the carrying business for the present system of competition, which really resolves itself very frequently into combination. Mr. Pope's railway would "not cover more than fifteen hundred or sixteen hundred miles of ground," the main trunk line intersecting the kingdom from Glasgow or Edinburgh to London, with branches to all the great commercial centres and chief ports. He considers this a most favourable time for commencing such an undertaking, as "hundreds of millions are waiting a good opportunity for investment," and labour, materials, and land, are cheap. It would be constructed on intelligible principles, with limited and clearly-defined Parliamentary powers as to rates; and would establish such a competition with the existing lines that they would be compelled to adopt the same scale of charges in self-defence. We do not at all think, however, that either the unemployed labour or the idle hundreds of millions will be utilised to carry out this great idea.

A FEW words of information may be of interest in regard to the Mr. D. Alexander, mentioned in our commemorative notice of the late Mr. I'Anson last week, as having been associated with Mr. I'Anson's father, and having had at one time an extensive practice in the City of London. Daniel (not David, as printed by mistake last week) Asher Alexander was born in London in 1768, was educated at St. Paul's School, in 1782 he entered the Royal Academy, and two months after his admission, he then being only fourteen, he obtained a silver medal. He was a pupil of Samuel Robinson, and commenced practice as an architect as soon as he was out of his articles. One of his earliest works was the widening of the bridge over the Medway at Rochester. In 1814 he reported, in conjunction with Mr. George Dance, the City Surveyor, and Mr. Chapman, an engineer, on the condition of London Bridge. He was Surveyor to the London Docks Company and the Trinity House. His principal works were the London Docks Warehouses and the Convict Prison at Dartmoor, originally built for a military prison; the County Jail at Maidstone; and the Royal Naval Schools, Greenwich. Among his pupils were W. H. Ashpitel (father of Arthur Ashpitel), Jas. Beek, Joseph Woods (author of an "Architect's Letters from Italy"), Jas. Savage, Jno. Whichcord (father of the late President R.I.B.A.), Jas. Pritchett, Edward I'Anson (the elder), John Wallen, and Richard Suter. He died March 2nd, 1842, aged 74. There is a notice of his life in the *Gentleman's Magazine*, August, 1842, probably written by his pupil, Richard Suter.

THE young men of the Architectural Association have made a start with their proposed list of buildings. A specimen page, issued as a loose leaf with "A. A. Notes" for February, contains notes on buildings in Hampshire supplied by Mr. C. R. Pink. The intention is that "all the information shall be furnished at first hand, from the personal observation of competent professional architects." The whole scheme has a promising look, making one wish that the work had been completed at least a good twenty years ago. Guide-books are too frequently mere compilations; and even the most capable and persevering makers of guide-books find themselves compelled to see some things through the eyes of other people,—not all of them professional architects. The lists as issued are "not intended to be final and complete. They will be added to from time to time as fresh information is obtained." Our readers would do well to lend a hand in supplementing references, and generally pushing on the work; and it will want some pushing on. With many active workers, and an issue of twenty pages a month similar to the specimen page, the completion of England may be at hand in about six years. After a rest of a year or two for revision, that part might be issued in portable volumes; it would make about a couple of volumes like the 1888 Whitaker. Once done well the task will not want doing again.

THE February issue of the *Classical Review* (a double number of good double value) adds some interesting particulars about the Praxiteles-Eubouleus head to which we drew attention some weeks back. We are glad to learn that casts of the head can now be obtained at Vienna, and we share the hope of the Editor of the *Review* that a copy may soon be added to the South Kensington collection. Till then the head can only be studied in the phototype plate published in the Ἐφήμερις Ἀρχαιολογική, 1886. Dr. Benndorf has just published in the *Anzeiger der Phil. Hist. Classe* (1887, 25) a discussion of the whole question as to whether the head found at Eleusis is really by Praxiteles or not, and of his paper the *Review* gives a brief summary. There exists in the Vatican a term,—alas! headless,—inscribed Εὐβουλεὺς Πραξιτέλους. Hitherto this was supposed to be the signature of some artist Eubouleus, and rendered "Eubouleus, son of Praxiteles": now there is little doubt it must be read "Eubouleus, by the artist Praxiteles." The head belonging to the term was no doubt a copy of the Eubouleus statue by the great Praxiteles. Close to the Eleusis head was found an inscription in honour of Eubouleus. The name seems to have been a euphemistic title of the god of the lower world,—this worship was closely bound up with that of Demeter. According to the legend, he was the landsman whose pigs where swallowed up when the earth opened to receive Persephone. In his honour pigs were thrown into the chasm of Demeter, and at the Thesmophoria women performed strange and somewhat unsavoury rites with the flesh of these same pigs. But by the time of Praxiteles, Eubouleus, like many another deity, worshipped at first with repulsive rituals, had taken on himself the shape of a fair youth goodly and gracious. The head is doubly interesting as, given that it is by Praxiteles, it belongs apparently to his later, as the Hermes to his earlier, manner. We may add that the same number of the *Classical Review* contains a very interesting letter on "Archæological Schools at Athens," by Mr. T. R. Wheeler, of Massachusetts. The positions and aims of the German and American "schools" are clearly contrasted,

and there is much to be learned from the comparison.

THE choir of Dunblane Cathedral, as most of our readers are aware, has, since the Reformation, been used as the parish church; but the remainder has the aspect of a ruin, although Dr. Rowand Anderson, who has been called upon to report if it is in such a condition as to be capable of being restored, is "of opinion that the walls are strong enough to carry new roofs, and that the decay, although considerable, is only superficial." The movement for restoring the whole edifice has arisen from the circumstance that the portion used as the parish church has become insufficient for the requirements of the congregation. The edifice and surrounding grounds are the property of the Crown, and upon the Government being communicated with on the subject a reply has been received to the effect that if within twelve months a sufficient sum is raised to carry out the proposed works to the satisfaction of Her Majesty's Board of Works, the Government would be prepared to hand over the building to the Board of Manufacturers in Scotland, to hold it in trust for the nation, subject to the right of use by the heritors as the Parish Church of Dunblane. The heritors resolved to accept these terms, and are about to issue an appeal for subscriptions, from which we gather that 13,500*l.* has been already guaranteed, and that it is hoped it may be possible to raise that sum to about 25,000*l.* We may here mention that in the *Builder* for Nov. 21, 1885, will be found two views of the Cathedral.

IN compliance with the requirements of the Education Endowment Commissioners, new Science Buildings have been erected in connexion with Heriot's Hospital, Edinburgh, at a cost of 6,000*l.*, from the designs of Mr. Chesser, architect. These new buildings are not in contact with the fine old and well-known structure which formed the locus of the foundation of "Gingling Geordie," but occupy a site at the extreme northern verge of the grounds overlooking the Grassmarket; and with them has been amalgamated the old Heriot Bridge School, the square tower of which forms the culminating feature of the building. The new accommodation includes physical laboratories and lecture-room, chemical laboratory and lecture-room, a balance-room, wood and iron workshops, and a large and well-furnished gymnasium. The respective rooms are supplied with the necessary apparatus, and a four-horse power Otto gas-engine furnishes the requisite power to the machinery and drives a dynamo for the supply of electricity to accumulators for the use of the physics laboratory and light for evening classes. Under the old *régime* 200 was the maximum number of pupils taught in the Hospital, but at present the number has increased to 734, many of whom are drawn from the better class of Board Schools.

THE inaugural address delivered by Mr. Walmisley, as President of the Society of Engineers, at Westminster Town-hall on the 6th, is a rather remarkable one in the wide range of subjects on which it touches, and which are all reviewed very ably. Space will not permit of our reprinting it *in extenso*, but we give a short summary of it on another page, and may commend it to notice as a very comprehensive review of the present position of engineering work.

MR. J. WREGHITT CONNON has circulated what he is pleased to term a summary of the arguments for and against the Legal Registration of Architects, but which is, in fact, a mere piece of advocacy of his own views, coupled with attacks on the central representative body of the Profession, and playing into the hands of the company of "one engineer, two lawyers, three doctors, and ten architects and surveyors," who are posing as the reformers of the Profession. Mr. Connon does not scruple to support his case by representing the architectural Profession at present, of which he is a member, in the most unfavourable light that he can, and insinuating that they are not to be trusted in administering other people's property, all which is to be altered by "registration"; a line of argument which his professional brethren will no doubt know how to appreciate. It is a pity that Mr. Connon's zeal seems so entirely untempered by judgment, tact, or discretion.

UNDER the title "In and Out of Doors," a collection of drawings by past and present Students of the Institute of Painters in Watercolours has been on view at the Goupil Gallery, which seems to show that there are one or two good water-colour artists coming up. One of the best exhibitors is Mr. Nelson Dawson, whose shore in No. 60,—"A fringe of silver foam along the flat brown sand,"—is indeed not strictly in perspective, and appears as if sloping down hill toward the spectator, owing to the drawing of the curves of the pools in the sand not being sufficiently foreshortened; but this, and one or two others by the same hand, show true artistic feeling. Mr. Heaton Cooper's "Manor Farm, Wraysbury," is a very good piece of realistic landscape painting. The general average of the work is good, with perhaps too great a tendency towards "Impression."

THE collection of Venetian studies by Mr. Roussoff, at the Society of Fine Arts Gallery, we like better than his previous collection; there is less of manner about them; but the small works are the best. Some of the little bits in out-of-the-way corners of Venice are admirably treated, especially "A Venetian Garden" (32), with buildings rising over a mass of foliage in the garden; and, among others, we like especially "Venice at Daybreak" (11), "A Bright Afternoon" (17), "San Georgio" (23), "In the Pinetta, Ravenna" (31), &c.

THE paper read by Mr. Starkie Gardner at the Society of Arts recently on "The Monumental Use of Bronze," and which has now been printed in the Society of Arts *Journal*, is an admirable review of the subject both in an archæological and artistic sense, and comes very appropriately at a time when it seems likely, partly through the influence of a sculptor of genius, that the combination of bronze with marble for monumental works will be revived.

THE inability of French journalists to give English names correctly is curiously shown in a brief paragraph in *L'Architecture* announcing the death of "M. Georges Godvin." The paragraph is signed by a French architect who knew Mr. Godwin well, and was frequently in correspondence with him, and who would have written his name correctly; but the editorial department of the paper has apparently metamorphosed it into what they think it ought to have been.

THE generosity of the advertisers of architectural competitions becomes more and more embarrassing. The latest development in the method of making use of the profession is in a recent advertisement for a design for an Armada Tercentenary Memorial to be erected on the Hoe, at Plymouth, for which the Committee "are prepared to receive gratuitous designs." Many people in this world "are prepared to receive" anything they can get gratuitously, but they do not all state the fact in so candid a manner.

Competition: St, Michael's Church, Workington. — The parish church of St. Michael, Workington, which was destroyed by fire over a year ago, is to be restored. Seven sets of plans have been received, and those with the motto "Experience B," have been accepted. The joint authors are Mr. J. Howes, Workington, and Mr. Basset Smith, London. The restoration of the building will be upon the old lines, but treated in the Gothic style. The estimate for the work, including an addition to the height of the tower, is about 6,000*l.*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE sixth ordinary meeting of this Institute for the present session was held on Monday last, Mr. Alfred Waterhouse, R.A. (Vice-President), in the chair.

Obituary.

Mr. W. H. White (Secretary) said,—Sir and gentlemen, I have to announce formally the decease of Mr. C. Sherlock, of Liverpool, Fellow; Mr. George Godwin, Past Vice-President; Mr. Edward I'Anson, the President; and of M. Charles Auguste Questel, the *doyen* of the French Architectural Academicians, who died on Monday last, the same day on which our President died.

The Chairman said.—Gentlemen, I feel it is unnecessary for me to enlarge on the loss which our Institute has sustained. I am sure it must recall to every one now present the sad fact that we shall see the genial presence and hear the kindly words of our late President no more. His loss has been a terribly sudden one to us. Our President died in harness; full of years, yet with his intellect and his energies unimpaired, and though he retired from our midst a few weeks ago to undergo an operation, we anticipated his speedy return to this chair, which he had occupied for nearly two years so much to our satisfaction. I am sure the members present, having a keen sense of their own loss, will sympathise with the late President's family in their bereavement, and especially with his son, our Fellow, and for so many years his father's partner. I hope Mr. Edward I'Anson may one day be induced to write an obituary notice of his father. I am sure a faithful record of his professional life would be of the deepest interest. We should see that our late President was a man of extraordinary industry, as well as a remarkable early riser; up to the very last not unfrequently rising at five o'clock, and, as might be expected from this, of simple and unostentatious habits. He was a pupil of his father in Laurence Pountney-hill (where he ever afterwards practised his profession), and studied drawing in a school in Furnival's Inn, where our lamented and ever youthful Fellow, the late Edmund Woodthorpe, was his fellow pupil. He spent two years in Italy, Greece, Turkey, and Germany in completing his professional education, returning home with a large portfolio. He has ever since been a great traveller and a most dexterous and indefatigable sketcher. Any information which he thus obtained, whenever likely to be of interest to us, his brother architects, has always most generously been placed at our disposal, as the many valuable papers from his pen in the Transactions of the Institute bear testimony. It will be fresh in the memory of most of us that he read a most interesting paper a few years ago on the Churches of Cyprus, illustrated by his sketches in that island. On another occasion he gave us the result of his visit to Moscow. One of the most singular characteristics of our late President's career was that whilst he thus kept constant touch with the artistic side of his profession, he was distinguished for his skill and varied practice as an arbitrator or referee. He was largely engaged in railway compensation cases, always, I am informed, acting against the railways, and so fighting on the weaker side. He had a marvellous knowledge of the value of City property, a knowledge naturally in great request. This dual nature of his attainments and practice is curiously illustrated by the fact that he was for a time President of this Institute and President of the Surveyors' Institute concurrently (applause). I cannot venture to give an exhaustive list of Mr. I'Anson's works, most of them in the Italian style, and remarkable for their breadth and refinement of treatment. Some of them,—as the British and Foreign Bible Society's House, the Merchant Taylors' School, the Medical School and Library of St. Bartholomew's Hospital, the Corn Exchange in Mark-lane, and the Residence of Sir Richard Webster, at Cranleigh,—are well-known and admired productions. He was one of the first architects employed in erecting buildings intended exclusively for offices, in which he set the fashion of using white-glazed bricks for lining the internal walls. I am conscious that I have alluded to our late President's career in a very inadequate way, and heartily wish that it had fallen to some more eloquent tongue than my own to

recall his merits as a man and an architect.

The Chairman, continuing, said,—"It is also my melancholy duty to allude to another loss which we have sustained. Since our last meeting in this place another light in the architectural world has been extinguished. George Godwin, for forty years the editor of the *Builder*, died only a day or two before our President. I believe that by length of membership he was the oldest member of the Institute, while the President succeeded him in that distinction, though for so short a time. Like the late President, Mr. Godwin enjoyed the advantage of having had an architect for his father. At an early age he obtained the first silver medal ever given by the Institute, for his celebrated essay on "Concrete," and we all know how earnestly everything affecting the interests and honour of the profession and its status before the public received his support (applause), how lucidly every subject likely to interest architects or a sympathetic public, of an artistic, archæological, scientific, or practical nature, was handled in the pages of that able journal. On the subject of "Healthy Homes" Mr. Godwin's vigilance was never for a moment asleep, and probably the cause of sanitary science owes more to him than to any other man (applause). He received the Gold Medal of the Institute at the hands of Mr. Street, and shortly after founded the Bursary, which bears his name, for encouraging the study by English architects of contemporary architecture and architectural practice abroad. Though Mr. Godwin retired from the editorship of the *Builder* four or five years ago, he continued to evince great interest in every question affecting the profession. I feel that we must all deplore the loss we have sustained in one week by the removal of two such veterans as George Godwin and Edward I'Anson.

The Presidency.

Mr. J. Macvicar Anderson (Hon. Sec.).—Sir: It is not with the object of adding one word to what you have so ably and faithfully expressed, as to the feeling of regret that we all experience on the death of our President, that I rise. The emotion which one not unnaturally felt when following his remains to their last resting-place in the quiet village churchyard of Headley, on Saturday, was, I believe, common to every member of the large assemblage then present.* It would, indeed, be strange if some degree of emotion were not experienced by us all at the somewhat unexpected termination of a career so prolonged, and not undistinguished. But my object in rising is rather to draw attention to the position in which we find ourselves placed by the death of Mr. I'Anson. The by-laws provide that in the event of the death of the President during his term of office, the Council are empowered to call a special general meeting for the purpose of electing a President to occupy his place, such election taking place according to the precedure laid down in the by-laws. Now, you are all sufficiently familiar with the procedure to know that it takes six or eight weeks to put it in motion: consequently, if we call a special general meeting now for the purpose, a President to take Mr. I'Anson's place could only be elected somewhere about the beginning of April, which would be only one month from the 1st of May, when the President would have again to be elected according to the by-laws. The Council, having considered the matter, have resolved to recommend this course, subject to the approval of the Institute, viz., to request the Senior Vice-President, Mr. Waterhouse, to fulfil the duties of the President during the remainder of the official year. If the Institute confirm that recommendation of the Council, I think they will adopt the best possible course under the circumstances. In order, then, to put the matter fairly before you, I shall move, as a member of the Institute:—

"That Mr. Waterhouse, as senior Vice-President, be requested to be kind enough to fulfil the duties of President during the remainder of the official year; that is, up to the 1st of May."

Mr. Charles Barry seconded the motion, which was unanimously agreed to.

The Chairman.—Gentlemen, I am deeply impressed with the honour you have done me, and for the confidence you have reposed in me, in placing me in this distinguished position. I shall endeavour to fill my duties as well as I can, although I am deeply sensible that they will not be fulfilled in the way they ought to be (applause).

The Royal Gold Medal.

The Chairman.—Gentlemen, the time has arrived when it is the duty of the Council to announce to you the name of the person whom they recommend as a fit recipient of the Royal Gold Medal for Architecture. They regret that, owing to the premature death of Harry Hobson Richardson, of Boston, U.S.A., before his work was known and appreciated by British architects, his name has not been included in the list of those eligible to receive that mark of distinction. The Council, pursuant to By-law 76, purpose to submit to Her Majesty the Queen the name of Theophilos, Freiherr von Hansen, Hon. Corr. Member, of Vienna, as the person to whom the Royal Gold Medal for the current year should be awarded, for his works as an architect; notably, the Sina Academy at Athens, and the newly-erected Parliament Houses at Vienna (applause).

Portrait of a Past-President.

Mr. Charles Barry, as Treasurer of the Ewan Christian Portrait Fund, then presented the portrait of that gentlemen to the Institute, and bore testimony to his many estimable qualities. The artist, Mr. Ouless, had executed the commission quite *con amore*. Acting on a suggestion by Prof. Kerr, the subscriptions had at first been limited to one guinea, in the expectation that a large response would be the result. Prof. Kerr's anticipations in that respect had not been realised, and a good many of those who had subscribed had increased their subscriptions later, with the result that there only remained a deficiency of a few pounds, which would be easily met. Incidentally, Mr. Barry expressed the hope that some means might be found of obtaining a portrait of the late President, Mr. I'Anson.

The Chairman.—I have to express the thanks of the meeting to Mr. Barry for the trouble he has taken in the matter, and especially to Mr. Ouless for the very excellent portrait of Mr. Christian which he has executed. It is a good portrait of a good man, and I feel sure that you wish me to accept it on your part with enthusiasm (applause).

Votes of Condolence.

The Chairman.—There is one matter I omitted at the time when speaking of our great loss, and that was, I thought it would be agreeable to this meeting that a letter of condolence should be addressed to the members of the late President's family,—perhaps to his son, Mr. Edward I'Anson,—expressing our sympathy and our sense of the loss we have sustained (hear, hear).

The Chairman's suggestion was unanimously agreed to.

Professor Kerr.—I hope a similar letter will be addressed to the family of Mr. Godwin, who was a much more distinguished man than many gentlemen present, who did not know him personally, may suppose. He was a man behind the scenes in all artistic matters, and a leader in many important movements which lay under the surface of affairs and did not always come prominently before the public. He was one of the most distinguished men in the profession, in the opinion of those who knew him well; and he has also been the most liberal of all those who have endowed the Institute with funds, the sum of money he bestowed upon us being the largest we have received. We all know that he took a very deep interest in the affairs of the Institute, and for forty years he pulled the strings (I may say) in favour of it as no one else could do (applause).

Mr. Macvicar Anderson.—We quite expected to be asked by the meeting to send a letter of condolence to the family of Mr. Godwin, and will have the greatest pleasure in doing so (hear, hear).

The Auditorium of a Theatre.

The meeting then resumed the discussion on Mr. Ralph Nevill's paper on "The Auditorium of a Theatre," read on 5th December last, and of which we gave a summary at the time (see p. 798 of our last volume).

Mr. E. J. Tarver read a paper on the subject, the substance of which we have already published.*

Mr. Alfred Darbyshire, Fellow (who was unavoidably prevented from being present), stated, in a written communication, that it was his firm conviction that the time had arrived when theatre-building must be subjected to State control or legislative enactment, that every detail of arrangement and construction should be distinctly fixed, and that it should be impossible for any theatre, in the future, to be erected unless in strict conformity with rules and regulations laid down for the safety of theatrical audiences. In the first place, future theatres should, if possible, stand on their own ground, and be surrounded by approaches. Where this was impossible, certain arrangements of exit must be insisted upon. Isolation of the main constituent parts must be a *sine quâ non* in theatres; the auditorium must be closed, if required, from the stage; the players and the workmen must also be in a position to separate themselves from the stage and its burning contents. Each portion of the auditorium must have at least one entrance and one exit, both of which must be in nightly use. Every exit, whether staircase, lobby, or corridor, must lead from the stage and not towards it. Where the site renders this impossible, the lobby or staircase must be hermetically sealed against fire or smoke, and no openings must be tolerated, with the exception of those from the house and into the street. By this means escaping fugitives would not meet the rush of poisonous gases. Every staircase for public use must be at least 4 ft. 6 in. clear width, but as wide as circumstances would allow; staircases 5 ft. 6 in. in width and upwards must be divided by central handrails, and all staircases must have wall handrails. No wheel-steps or winders should be used on any pretext whatever. The staircase plan recommended by Mr. Nevill was full of danger. The steps should have a minimum tread of 12 in., and a maximum rise of 6½ in. The doors should open outwards and be fitted with the new exit-lock. The auditorium floor should on no account be placed below the street levels, and theatres should not be more than one tier in height, while the highest occupant of the auditorium should be placed as near the street level as possible. Materials of construction should be fireproof, and, wherever the human foot had to tread, should be secured against flame or heat. These were the main principles of the Irving-Darbyshire plan, which was so arranged that in the event of a stage-fire the stage and its contents might be destroyed without injury to the rest of the edifice. In replying shortly to Mr. Nevill's objections to his plan, Mr. Darbyshire said it was not the fact that a portion of the audience were so far removed from the proscenium that they saw little of the stage and less of the actors. In the Lyceum the greatest distance from the proscenium to the back of the pit was 84 ft., the visible height of the stage from that point being only 4 ft. 6 in. In the new plan the distance was 90 ft. 3 in., and the visible height of the stage was 15 ft., and there were many theatres in London in which this visible height was not 15 ft. The Irving plan secured what was essential,—viz.: that the most remote occupant should have a view of the complete figures of the actors. With reference to acoustics, a new theatre at Crewe had been just completed from his designs on the Irving plan, and the acoustics were most excellent. In the Comedy Theatre, Manchester, Mr. Darbyshire had used dry fibrous plaster for the lining of walls, ceilings, and tier fronts throughout, and the admirable acoustical properties were owing to the fibrous plaster lining. As to the subject of future enactments on the building of theatres, severe though wise regulations must be expected, and it was the duty of architects

* The President's funeral took place in the picturesque churchyard of Headley, near Liphook, about three miles from Grayshott Park, the country residence of the deceased, on Saturday last, Feb. 4. A large number of his relatives, friends, and assistants were present, and many went from the metropolis and other parts of the country specially to attend the funeral. The Surveyors' Institution and the District Surveyors' Association were officially represented, and the Surveyors' Club, to which Mr. I'Anson was elected in 1852, his father (who died in 1853) having been elected to the same club in 1815, thus showing an unbroken succession of father and son for seventy-three years, was represented by Mr. Charles Fowler, as President, and Mr. J. W. Penfold, as Vice-President. The Architectural Association of London sent its President, Mr. John Slater, B.A.; its Vice-President, Mr. H. D. Appleton; and Mr. T. E. Pryce, its Hon. Secretary. Mr. C. F. Hayward, F.S.A., Mr. Aitchison, A.R.A., Mr. James Brooks, Mr. Arthur Cates, Mr. J. Macvicar Anderson, and Mr. William H. White, attended on behalf of the Institute. Mr. C. R. Chorley, J.P., travelled from Leeds, as President and representative of the local Society of Architects, in order to be present.

* See *Builder*, Dec. 10 last, p. 822.

to assist a judicious legislation rather than to attempt opposition. Any satisfactory legislation on this matter must be sweeping and revolutionary in character, and when, finally, law was established, it must be strictly and severely administered. It was to be hoped that some central authority would be constituted with power to approve or reject plans, and with properly appointed inspectors to see that plans were strictly carried out and adhered to. This would remove the unpleasant contention now existing between managers, owners, and the magisterial bench, which led to very unsatisfactory results.

Mr. William White, F.S.A., said he thought Mr. Tarver had pillaged a part of his ideas, and that without acknowledgment (laughter). He had always dwelt strongly on the benefit which would arise from having staircases from the front of the galleries and circles instead of the back. With regard to the acoustic properties of buildings, he had invariably used solid concrete for floors and platforms for organs, and for lecture and concert rooms, and found that the resonance was of a nature that would transmit sharply and quickly the smallest note of music, and the clear notes of ordinary articulation, which were to a great extent swallowed up where there was merely a hollow wooden platform.* There was little danger of wood panelling communicating much fire if bedded in the plaster; but if fixed on plaster with only battens or fillets, it was one of the most dangerous conveyors of fire that could be found.

Mr. Robert Walker said he considered it imperative that buildings licensed for a public purpose should be made safe, under the supervision of the public authorities, and if they, as architects, did not meet that demand they would be superseded by engineers and other experts (hear, hear). He would like to lay down a few general rules as the results of his experience in dealing with theatrical buildings. The first was that a building constructed at half its proper cost could not be a safe building. The question of site was also an important one, as the majority of theatres were built on improper sites. It ought, therefore, to be laid down that no theatre should be allowed to be built except on such a site as would permit of all necessary facilities for entrances and exits. Then came the question of materials for the construction of the theatre. It had been proved that theatres could be built, if the proper amount was expended, of thoroughly fireproof materials, and without the slightest risk of any part burning. All the plans that had been discussed appeared to deal with winding staircases and stairs; but circular staircases would always be sources of danger. Dealing with the question of sound, the Alhambra, which had not a particle of wood in it,† and Terry's Theatre, built on the same plan, were both wonderfully resonant. No match-boarding on or against the walls should be used in any part of the theatre. Then, again, the roof should be fire-proof, and there was no difficulty in making it so; for, if architects could not do it, engineers would. As the stage contained so much combustible material, the proscenium wall should be cut off in some way by an absolutely fire-proof separation. That had been done in the case of Terry's Theatre by an asbestos curtain, and at Prince's Theatre by a fire-proof iron curtain. The more those matters were discussed by practical men the better would they be able to meet the wants of the public, and to do good to their profession by showing that they could do better than the engineers now attempted.

Mr. J. Tavenor Perry said he believed that the resonant property of concrete, as in the case of the Alhambra, was due to the hollow air-spaces in the material. Mr. Nevill, in his paper, talked about the top of the proscenium-opening being at an angle of 30 deg., but at the Alhambra a sounding-board projected about 7 ft. from the proscenium opening, preventing any of the voice-sound from getting up into the dome, but allowing the whole of the orchestra sound to do so. So far as the exits were concerned, the Alhambra had a frontage of 100 ft., and no theatre in the world had anything like that. The Alhambra was the first attempt at constructing a fire-proof theatre, and everything connected with it had been carried out in accordance with the requirements of the Metropolitan Board of Works.

Captain Heath next explained a fireproof proscenium curtain invented by him, and described and illustrated by us in the *Builder* for Nov. 5 last, p. 649.

Mr. R. M. Roe, Associate, also described a series of his plans for a theatre, each circle having a separate entrance and exit, brought from the upper and lower level of the circle. There was also a separate wall around the auditorium proper, and not the usual partition; while another peculiarity was the *mezzanine* boxes, which he had been able to construct by having a double corridor.

Mr. Nevill, in replying, said that some of the speakers had used a great many of the same arguments that he had in his paper. Mr. Emden, at the former meeting, had referred to the paper being an entirely theoretical one, into which he, as a practical man, could not go. That, however, seemed a remarkable line for an architect to take, as such a man was bound to know all the theory of the question. Mr. Emden also objected to elliptical stairs, on the ground that they made people giddy. He (the speaker) did not think that would be the case with such a stair as he had spoken of, where the steps at the sides were of a very slight curve, with a straight landing at each end between. It should be remembered that even in a square staircase one had to go round. Most of what Mr. Darbyshire had said was contained in his (Mr. Nevill's) paper. Mr. Darbyshire also had objected to his stairs, but if the gentlemen who had done so had answered his (the speaker's) objections it would have been more to the point. Mr. Emden's objection that people would become giddy was a fair one; but Mr. Darbyshire's objections were worthless. A winder or occasional stair was, doubtless, a dangerous thing, because people did not expect it; but that did not apply to his staircase. The danger was in changing from a straight to a winding stair (hear, hear). All over France and the Continent there were plenty of stairs on an ample curve, but he had never heard of any complaint as to their being dangerous. Whereas he had gone into detail, and tried to point out where the objections were, his critics had done little or nothing to upset them. The reason why wood was advocated was that it gave beauty of sound as compared with plaster or concrete, and that point had not been dealt with. He was sorry he had not referred to the Alhambra, but in his paper he had dealt merely with theatres for acting.

The proceedings then terminated.

The model of Mr. Tarver's design, described in our issue of December 10th last (and now on view at his office), which is designed to meet the difficult problem of starting the auditorium from the street-level upwards, was exhibited after the discussion, as well as a second design, providing 174 stalls and a large pit sunk below the street level. The dress-circle stairs and separate cross corridors become, in this case, unnecessary, and, in various ways, the number of seats is increased to 1,234, still within the area of an ordinary theatre seating 766. It is claimed, therefore, that by sacrificing a few hundred seats in either of the designs that Mr. Tarver has worked out, space can be obtained for grand entrance-halls, &c., without falling below the number of seats usually provided by the ordinary arrangement of back corridors.

A TRIBUTE TO THOSE WHO ARE GONE.

THE following observations were addressed by the Professor of Architecture at University College (Professor T. Roger Smith) to the students of his class at their meeting on Tuesday, the 7th inst., as a small tribute to the memory of the two distinguished English architects whose decease has been lately announced:—

"I do not feel that it is right for us to proceed to the ordinary business of the evening without my making some allusion to the two distinguished English architects whose loss the profession has to deplore,—the late President of the Royal Institute of British Architects, and the late Mr. Godwin.

Mr. George Godwin is, of course (and deservedly), best known by his valuable literary services, and especially by the intelligent, energetic, and high-minded way in which he for many years conducted the leading journal connected with architecture. It is almost impossible to over-estimate the services rendered to our profession and the various branches of the building business by the establishment of such a journal as the *Builder*, and by the high level at which it was uniformly maintained.

As a pioneer in the cause of improving the dwellings of the labouring classes, and in the great and now widely-supported sanitary movement, and in other matters of the highest social importance, such, for example, as the utilisation of our canals as an auxiliary to railroads instead of allowing them to continue in disuse, Mr. Godwin used the great power which, as editor of an influential journal, he wielded to the highest public ends, and he uniformly used it well and wisely.

Mr. I'Anson was noteworthy as combining to a remarkable extent the artist in architecture with the hard-headed man of business. No one who examines such a building as the Bible Society's House with intelligence can fail to recognise that its architect was an accomplished and refined artist. No one who knew how Mr. I'Anson travelled and sketched and studied his art down to the very end of his career can fail to recognise that he was an enthusiastic student; and no one who had any opportunity of meeting Mr. I'Anson on business, or of knowing the wide influence which he exerted in business circles, and the implicit confidence placed, and rightly placed, in his judgment, experience, and fairness, can doubt that he was a complete business man. Now, this combination of two different sets of qualifications is what we all have to aim at, and I look upon the late President of the Institute of Architects as a most encouraging example of how possible it is for a man to attain eminence in both sides of an architect's duties.

Mr. Goschen, in his remarkable address delivered at Aberdeen, and printed in the daily papers of Wednesday, the 1st inst.,—an address which I hope you will all read,—says, with wonderful force and truth, that 'the habit of intellectual interest in all that is studied, learnt, or done' is a certain road to success in affairs. Both these men possessed that habit of mind in a high degree. Nothing else could, I think, week after week and year after year have supported Mr. Godwin in the incessant and often anxious toil which is involved in the conduct of a journal. Certainly nothing else could have enabled him to conduct that journal so well,—to keep it so fair, honourable, and accurate, and to fill its columns with such a flood of useful and interesting matter, and such wise and suggestive observations. I, perhaps, having tried my hand at it, know more than most how hard it is to edit a journal. All of you, however, can in great degree understand how hard it is to conduct a large architectural and surveying practice so that the buildings shall be artistic, and the valuations sound, and nothing but a keen and, as Mr. Goschen puts it, an intellectual interest in his work, an interest which never seemed to flag down to the very last, could have enabled Mr. I'Anson to do this.

The only other point I intend to notice is one which I regard as the most important, and as largely contributing to the great success which attended the career of each of these men. I refer to their high personal character. Probity, honour, straightforwardness, trustworthiness were ideas which were always connected in our mind with the one man and the other.

It is a very difficult task indeed to conduct a journal with perfect fairness, and not easier to conduct a practice in the same manner; but the universal confidence felt in both these men during their lives, and the universal respect shown to them now, are sufficient testimonies to the fact that, above all things, each of them was a man of honour."

The Buccleuch Memorial.—The memorial erected in West Parliament-square, Edinburgh, to the late Duke of Buccleuch was unveiled on Tuesday last, by the Earl of Stair, in presence of a large concourse of people. The design has been already described in our columns. The statue has been placed looking north-west, and when viewed from that direction the monument groups most effectively with the west façade of St. Giles' Cathedral. The cost of the monument is stated to be 6,700*l*.

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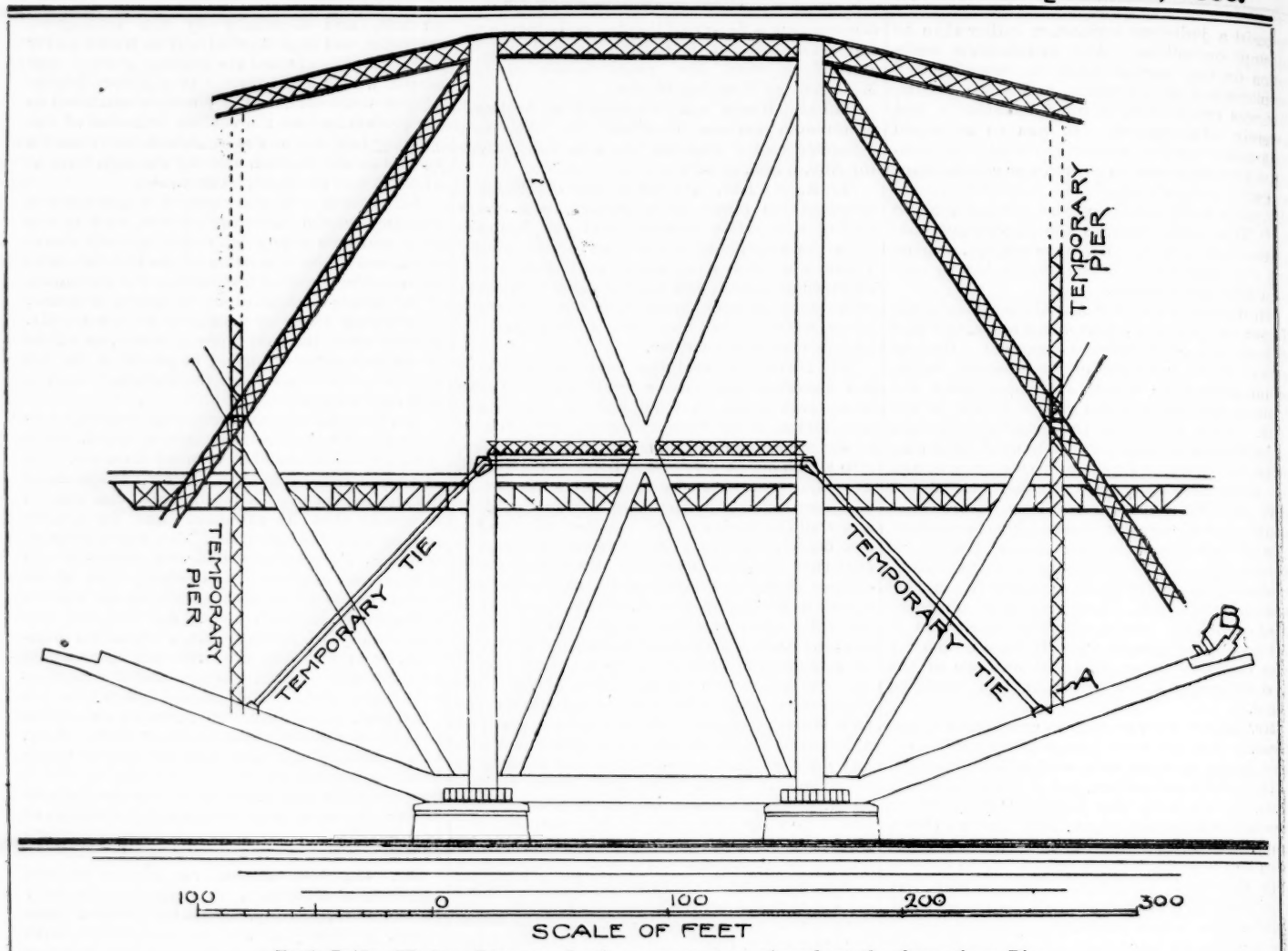
* Such an opinion is totally at variance with all musical experience and theory. One of the first requisites for an orchestra is a platform of resonant wood—the more resonant the better; as to supposing that a concrete floor can do as well, Mr. White might as well suggest that a fibrous plaster violin would be as good as a wooden one.—ED.

† In the auditorium, we presume is meant.—ED.



Forth Bridge Works.—Diagram showing present stage of work at the Queensferry Pier.

PRESENT STATE OF THE FORTH BRIDGE WORKS.

MR. BAKER, in reply to a recent inquiry as to how his vast structure was progressing, has sent us the accompanying diagram showing the present state of the work on the Queensferry pier, the others being, we believe, in a somewhat similar stage. The top members of the cantilevers have been built out about 125 ft., and the compression members about 160 ft., as shown on the diagram. The lower (compression) members are, as will be seen, supported by temporary ties holding them up, from the main pier; the upper members have been built out, trusting to their own strength to hold them up for the time. Both members have deflected slightly through their own weight, and the lower tube member will be raised by hydraulic rams applied at A and B after which the first cross-tie on the cantilever, now nearly complete, will be connected to it, and the lower member so far will be stable. A temporary vertical pier is being pushed up, as shown on each side of the diagram, to hold up the top member until the construction is so far advanced that the first portion of the cantilever will be stable; the top member has alsoto be raised a few inches before proceeding further. Then the further building out of these two members, the lattice tension member at the top and the tubular compression member, will be proceeded with at once. Progress seems to have been very good since we saw the work, considering the greatly increased difficulties of this cantilever portion. We wish the engineers continued success in their bold undertaking.

Ventilation of Gas-lighted Rooms.—The German Association of Gas and Hydraulic Engineers offers a premium of 1,000 marks for the best essay on the ventilation of rooms lighted by gas. A previous competition for the prize last year did not lead to a satisfactory result, and the offer is now made for the second time. The work must be sent in by December 31st next, to the General Secretary of the Association. The conditions of the competition are published in No. 2 (1888) of the *Journal für Gasbeleuchtung und Wasserversorgung*.

THE ARCHITECTURAL ASSOCIATION.

THE eighth ordinary meeting of this Association for the present session was held on the 3rd inst., in the meeting-room of the Royal Institute of British Architects, Mr. John Slater, B.A. (President) in the chair.

Previous to the ordinary meeting, the adjourned special business meeting was held, and certain alterations were made in the rules of the Association.

Mr. T. E. Pryce (Hon. Sec.) at the commencement of the ordinary meeting announced that the Committee had now framed the conditions under which the prizes offered by Mr. Edis and Mr. Neale would be competed for, and these would be posted to the members. The Painter-Stainers' Company had also sent particulars of a Travelling Studentship they proposed to award for the study of decoration, and these would be communicated to the members at the same time.

It was also announced that Mr. R. Phené Spiers had presented a copy of a work by himself on "Egypt" to the library. A vote of thanks was passed to Mr. Spiers for his gift.

It was further stated that the visit on Saturday, the 18th of February, would be to the Great Northern Hospital, Holloway, Messrs. Young & Hall, architects.

The Chairman.—It is with very much regret I have to announce that since we last met two very eminent members of our profession have passed away. With regard to one of them, Mr. George Godwin, the late Editor of the *Builder*, I expect that he was not much more than a name to many of those who are at the present moment taking an active part in the work of this Association, because the bulk of his life-work was done during a former generation, and I do not think he was ever a member of this Association. But it is only a short time ago that he told me himself of the very great pleasure with which he had watched the growth of the Association, and the interest which he took in the educational work it was doing. Mr. Godwin's name will be perpetuated by the Bursary which he has munificently established at the Royal Institute of British Architects; I believe that Bursary has been gained on every occasion, or if not on every occasion, then on every occasion but one, by a member of this Association; therefore I do not think it would have been right to let the death of so eminent a man pass without notice here (hear, hear). With regard to Mr. I'Anson, President of the Royal Institute of British Architects, I will not say more than this,—that it was impossible for any one to be brought into contact with him without feeling convinced of the great love and enthusiasm which he had for architecture in all its forms, while the kindliness of his disposition, and the readiness with which he was willing to help any one who went to him for counsel and advice must be known to many of you (hear, hear). I think in this case something more than a mere formal notice ought to be made, and I feel sure I shall have your concurrence in moving from the chair this resolution, which I will ask Mr. Phené Spiers to second:—

"That the members of the Architectural Association have heard with great regret of the decease of Mr. Edward I'Anson, President of the Royal Institute of British Architects, and desire to express their condolences with the members of his family at the loss which they and the architectural profession have sustained by his death."

Mr. R. Phené Spiers, F.S.A.—I beg to second the vote which has just been proposed to you, and I will only add a few words. I do not think there is any one who held a higher position in our profession for his integrity and straightfordwardness; but to the members of the Association, there is another claim on their expression of feeling. Mr. I'Anson was eminently an artist. Even his earliest works showed, at the time when they were built, a very marked difference from the ordinary work which you find in England. He seemed at an early date to be strongly impressed by the refinement of French work, although none of his designs show any direct copying or imitation. Besides that, he was one of our greatest travellers; and he never made an excursion to any foreign country without bringing home a large number of drawings. Of course draughtsmanship, at the time when he started out on his career, was not quite of the same standard that it now is, and, therefore, the drawings he made were rather more notes for his own information, and also occasionally for illustrating the papers he read before the Royal

Institute of British Architects. He had travelled very far, and he was always ready and willing to give any one the benefit of his advice, both in questions of travelling, and also, if it was necessary, in questions of business. I beg to second the vote of condolence which you have moved.

The vote was then put to the meeting, and carried.

Mr. R. Phené Spiers next read a paper on "Mahometan Architecture," the first part of which we print on other pages of this number.

The first Saturday afternoon visit of the Architectural Association for the current session took place on the 4th inst. The first building visited was the Church of St. Paul, Palace-gardens-terrace, Kensington. Mr. Arthur Baker, the architect, met the members and described the work. The church, which consists of a chancel of three bays, with a nave of five bays, is built with red bricks from Bracknell, and covered with red tiles. The stone used for the caps and bases is a red sandstone similar to Corsehill, the rest of the pier being of bricks as from the kiln, not cut; the shafts for the roof principals being of black bricks. The church, which will seat 900 persons, is heated by hot water, and ventilated by means of a fan in the *flèche* driven by an electric motor, the fresh air, introduced by means of inlets being passed over the hot-air pipes. The next place visited was a house in Palace Court, Kensington, Mr. W. Harvey and Mr. Bernard Smith being joint architects, which was illustrated in the *Builder* for November 5th of last year.

Illustrations.

SCULPTURE: "AN ACT OF MERCY."

THIS is an illustration of the group by Mr. G. J. Frampton, which gained the gold medal and travelling studentship of 200*l.* at the last Royal Academy Students' composition. The point of view selected is the sculptor's choice; we think he would have done his work more justice artistically by selecting the opposite view, showing the child's figure in front, though the "story" of the work would perhaps not have been so clearly shown.

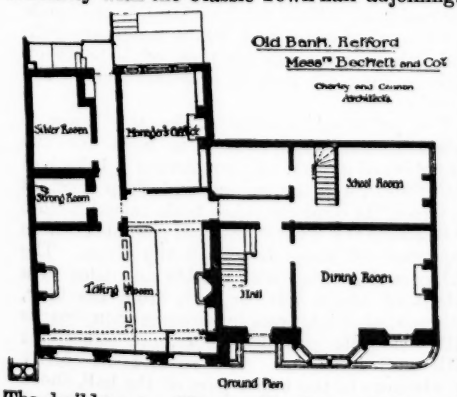
DENNINGTON CHURCH: MEASURED DRAWINGS.

As this is a good example of the average Suffolk church, and one which has not been illustrated, we give this week the remainder of the measured drawings by Mr. H. P. Adams, as complete measured drawings of a building of that kind are of considerable value to students of architecture. As mentioned last week, the drawings gained their author the Institute Silver Medal and ten guineas.

NEW BANK, ETC., RETFORD.

THIS building is being erected to replace an old structure used as a branch Bank for Messrs. Beckett & Co., which had become inadequate for the business done. The portion devoted to the Bank is entirely new; the manager's house adjoining is only being refaced to bring it into harmony with its new neighbour.

The style made use of has been adopted with a view to retaining the old-fashioned character of the town of Retford, or to keep some sort of similarity with the Classic Town-hall adjoining.



Ground Plan

The builders are Messrs. Tomlinson & Son, of Leeds, the red terra-cotta and facing bricks being supplied by Mr. J. C. Edwards, of Ruabon. The architects are Messrs. Chorley & Connon, of Leeds.

SANATORIUM, KING EDWARD VI.'s SCHOOL, SHERBORNE.

THE primary intention of this building is to afford the means of promptly isolating cases of infectious disease occurring in the school, and to that end provision is made for treating simultaneously at least three different kinds of fevers. It is held by most of the medical officers of large public schools that the sick-house should be used for every sort of illness or accident that may arise, and that one such house should serve for the whole school. In planning this building, therefore, the possibility of such an ultimate use has not been lost sight of.

The building consists of two blocks placed at right angles to each other, and connected by a covered bridge open to the air at both sides,—absolute atmospheric disconnexion being thus established. The ward block, which is placed nearly north and south, contains two wards for eight beds each, with nurses' room, pantry, W.C.'s, &c., attached.

The administration block contains on the ground-floor all the administrative offices, with larder, coal-cellar, and heating-chamber in a basement under the kitchen; and on the upper floor two single-bed wards for doubtful cases, and a larger ward for four beds.

All the large wards have, in addition to the open fireplaces, hot-water coils in the centre of the floor.

The walls are built of local stone, with Ham Hill dressings. The roofs are covered with Broseley tiles.

The builder is Mr. Alexander Beton of Sherborne, and the clerk of works, Mr. Smith; and the works have been carried out under the supervision of Mr. Keith D. Young, F.R.I.B.A.

The other portions of the schools, as our readers may remember, were built from the designs of Messrs. Carpenter & Ingelow, but Mr. Young was commissioned to undertake the sanatorium in consequence of his being known to have special knowledge and experience in hospital building.

COTTAGES, COTLEIGH, DEVONSHIRE.

OUR illustration shows two blocks of some cottages about to be erected on the Devonshire estate of Lord Compton. The plans of the two groups (figured in the drawing Blocks A and B) are very similar in arrangement. As regards elevation, it is proposed that the materials of Block B should be red brick, with Bath stone dressings and Whitland Abbey slates. The walls of block A up to the first-floor level are faced with red brick, and above that line they are hung with small grey slates, with which also the roof is covered. The design was prepared, and the work is being carried out by Mr. C. Harrison Townsend, late of the firm of Messrs. Banks & Townsend.

MAHOMETAN ARCHITECTURE.*

TWENTY-ONE years ago, shortly after my return from my tour in Egypt, I read a paper before the members of this Association on "Ancient Egyptian Architecture." It was my intention to have followed it up in the succeeding year by one on the Saracenic Architecture of Cairo. Other subjects in the interval turned up, apparently of more interest for the moment, so that its preparation and delivery has been delayed. In the meantime many publications have appeared which on the one hand have facilitated my researches; on the other have deprived the subject of some of the novelty it might then have possessed. Among these works is one written by Mr. Stanley Lane Poole on "The Arts of the Saracens in Egypt," which deals more or less exclusively with the architecture of Cairo, and, therefore, to a certain extent, cuts away the ground from under my feet.

It occurred to me, however, first, that I might take a broader view of the question and trace out the development of the style in other countries besides Egypt; and, secondly, that I might dwell on the architectural and constructional features of the style, endeavour to ascertain their origin, and deduce therefrom lessons which might be useful to the architectural student. It is for this reason that I have adopted the term Mahometan in the place of Saracenic. Mr. Poole, in advocating the latter term, points out that Saracen means Eastern, and was the universal designation of Muslims in the Middle Ages. He takes exception to the terms *Arab* and *Mahometan*, because the artists who built for the followers of Mahomet were seldom Arabs and frequently Christians. In that hypothesis he is quite correct, but it was the Mahometan religion which laid down the rules for the plans and features of the mosques; it was the restriction of that faith which led to all its characteristic features; and the term Saracenic can hardly be applied to the architecture of Spain, Persia, or Turkey, and only with the prefix of Indo- to its glorious development in India. It is possible that even Mahomet himself never dreamt of the magnificence in the development of the style which his precepts were destined to bring forth,—such as are displayed in the mosques of Cordova in Spain, of Ibn Touloun and Sultan Hassan in Cairo, of Ispahan in Persia, the Suleimanie at Constantinople, or of the mosque tombs of Delhi, Cawnpore, Ahmedabad, Bijapur, and the Taje Mehal in India. None the less, however, these monuments are the natural outcome of a style based on the requirements of the religion, restricted by the precepts which were set forth by Mahomet in the Koran, and of which style, therefore, he laid the foundation.

That you may be able more clearly to follow the description which I propose to lay before you this evening, I feel that I cannot do better (by way of preface) than quote some paragraphs from the introduction given by our great historian, Fergusson, to his chapter on Saracenic Architecture in Christian Countries:—

"The first century of the Hejira forms a chapter in the history of mankind as startling from the brilliancy of its events, as it is astonishing from the permanence of its results. Whether we consider the first outburst of Mahometanism as a conquest of one of the most extensive empires of the world by a small and previously unknown people, or as the propagation of a new religion, or as both these events combined, the success of the movement is without a parallel in history."

"Had it been a mere conquest it must have crumbled to pieces as soon as completed; for Arabia was too thinly populated to send forth armies to fight continual battles and maintain so widely extended an empire. Its permanence was owing to the fact that the converted nations joined the cause with almost the enthusiasm of its original promoters; Syria, Persia, and Africa, in turn sent their swarms to swell the tide of conquest and to spread the religion of Islam to the remotest corners of the globe. To understand either Mahometan history or art it is essential to bear this constantly in mind, and not to assume that, because the first impulse was given from Arabia, everything afterwards must be traced back to that primitive people; on the contrary, there was no great depopulation, if any, of the conquered countries, no great transplantation of races. Each country retained its old inhabitants, who, under a new form, followed their old habits and clung to their old feelings with all the unchangeableness of the East, and, perhaps, with even less outward change than is usually supposed."

"So weak, indeed, in the converted countries was the mere Arabian influence, that each province soon shook off its yoke, and under their own Caliphs, Persia, Syria, Egypt, Africa, and Spain soon became independent States, yielding only a nominal fealty to that Caliph who claimed to be the rightful successor to the Prophet, and, except in faith and the form of religion, the real and essential change was slight, and far greater in externals than in the innate realities of life."

"The Arabs themselves had no architecture, properly so-called. Their only temple was the Kaabah at Mecca, a small square tower, almost destitute of architectural ornament, and more famous for its antiquity and sanctity than for any artistic merit.

"It is said that Mahomet built a mosque at Medina,—a simple edifice of bricks and palm-sticks. But the Koran gives no directions on the subject, and so simple were the primitive habits of the nomad Arabs, that had the religion been confined to its native land, it is probable that no mosque worthy of the name would ever have been erected. With them prayer everywhere and anywhere was equally acceptable.

* By Mr. R. Phené Spiers, F.S.A., being a paper read before the Architectural Association on the 3rd inst., as elsewhere mentioned.

All that was required of the faithful was to turn towards Mecca at stated times and pray, going through certain forms and in certain attitudes, but whether the place was the desert or the housetop was quite immaterial."

It follows from this description that it will scarcely be in the earlier Mahometan buildings we should expect to find the characteristic features and details which constitute the style. At the same time, simple as the early tenets of the faith may have been, there soon arose that natural desire for extension of plan and architectural magnificence which is inherent in mankind, and which at an early period after the Hejira showed itself, more especially as Fergusson remarks, "when the Mahomedans came amongst the temple building nations, then they seem to have felt the necessity of having some material object, some visible monument of their religion, some feature which should point out to the faithful the direction of Mecca towards which they should turn at the time of prayer." This feature, called the Kiblah, was a niche or recess placed in a wall, the direction of which would run at right angles to a straight line from Mecca. In Egypt this would be south by east, in Spain east by south, in Persia south by west, and in India west.

In Jerusalem and Damascus the followers of Mahomet found Christian buildings, which for the moment, with slight modifications, served their purpose. In Egypt, however, the Mosque of Amrou or Amr, in Old Cairo, was founded in 642 A.D., and in Barbary, the Mosque of Kairwan, in 675 A.D. The plans of these two buildings were novel, and constituted a new arrangement. It is difficult to determine which of the two mosques can claim to have been the model on which subsequent mosques were planned, but there is no doubt that Mr. Carpenter (in the paper which he read before the Royal Institute of British Architects in February, 1884) is right in disputing the claim of the mosque at Mecca as the model. Before, however, entering into this question, it may be as well to point out the [requirements of the new religion. The first was, as already observed, the kiblah, or niche showing the direction of Mecca; subsequently covered over for protection from the sun's rays. This covered space might be from 30 ft. to 60 ft. deep; it was necessary, therefore, to have points of support. These they found in the columns and capitals taken from earlier Roman, Byzantine, Coptic, or even Egyptian buildings. These points of support not being sufficiently high, they threw arches across, tying them in with wooden ties at their springing, and formed a series of aisles all running towards the Mecca wall. This is the first architectural development peculiar to the earlier mosques, though subsequently modified. In front of this vista of aisles would be an open court, enclosed with walls and a covered arcade or cloister round from the entrance, which was generally placed in the opposite wall to that of Mecca.

Now, turning to Egypt, first let us examine the plan of the mosque of Amr or Amrou. It consists of a court 390 ft. by 357 ft., on the south-east side of which are twenty-two aisles running at right angles to the Mecca wall, and six columns deep; on the north-east side the aisles run parallel to the main aisles, and are five deep; on the south-west, four deep; and on the north-west, one running parallel with the north-west wall.

The argument in favour of the antiquity of the plan of Amr, as we now find it, lies in the fact that all the columns and capitals are about the same height, and are all taken from earlier buildings.

There is a square die above the capitals, which also might date from the earlier period, but above that there is an appearance in the arches (which are sometimes round, sometimes pointed, and sometimes round, with the upper portion raised by straight lines to a point, apparently to prevent the sinking of the voussoirs of the upper part of the arch) of reconstruction at some later date, so that we are unable to accept them as ancient.

In the south-east (the Mecca wall) are some pointed arches, now built up. If they are of the date of the foundation of the mosque they prove the antiquity of the pointed arch to be greater than is generally accepted.

The next mosque in Egypt in point of date is that of Ibn Touloun, 877 A.D. It is recorded that the architect objected to the use of materials taken from other more ancient buildings. We accordingly find in this mosque the first example of the new style: all trace of imitation of earlier work, whether Roman or Byzantine, having disappeared. Fergusson is inclined to look to Damascus and Bagdad as having influenced the result, but as no remains of buildings of earlier date in those towns are now to be found, and as tradition ascribes the design to a Copt or Christian architect, there is no reason to suppose that it is not indigenous. This is further confirmed by the valuable addition to our knowledge of Early Christian architecture in Egypt by the work of Mr. A. J. Butler on the "Ancient Coptic Churches in Egypt," published in 1884, which shows us that the tradition of building was preserved by the Copts from the earliest period of our era,—that the Delta, and the banks of the Nile for at least 1,000 miles south, abounded in Christian churches,—and that the materials employed in the earlier mosques at Egypt were probably taken from Coptic churches, the architects of whom had made use of the Roman and other features of still earlier buildings. In no other way is it possible to account for the preservation, after so many centuries, of the columns and capitals of Roman buildings. With the building of Ibn Touloun a new era commenced, and henceforth the new style takes its independent position. It is true that occasionally, even down to the fifteenth century, the temptation of using up old materials is not always resisted, but the method of their employment, and the type of ornament which was applied to them, is the direct result of the influence of the Mahometan religion.

The plan of the mosque of Touloun is similar to that of Amrou. The court is 300 ft. square. There are five aisles on the south-east (Mecca) side and two on the other sides. There is this difference, however, that the aisles on the Mecca side run parallel to, and not at right angles to, the Mecca wall. This alteration was possibly due to the constructive knowledge of its architect, who foresaw the difficulty, otherwise, of resisting the thrust of the much heavier superstructure above the arches. It is true that here, as at Amrou, there are occasionally wooden ties introduced at the springing of the arches, but these would have been insufficient for the purpose. The thrust by this new arragement is carried to the outer walls, which are of great thickness and weight. The arches of these arcades are pointed, stilted above the capital, with a slight tendency inwards to what is known in the horseshoe arch. The curve below the springing is much flatter than that of the arch above. The arches are carried on piers and not columns, and the angles of the piers are decorated with engaged corner shafts, the earliest instance, I believe, of the feature.

Between the arches above the level of their springing are small pointed openings with engaged shafts at the angles, which give scale to the former. Bands of ornament with Cufic inscriptions are carried in horizontal lines at the springing and above the arches inside. The archivolts and soffit of the arches are decorated with similar ornament, as also round the windows in the external walls and round the walls of the internal court, where also are two or three bands of decoration, to which I shall refer later on. The windows are filled with stone slabs, pierced with that geometrical ornament which is always peculiar to Mahometan buildings. The use of pierced stone slabs owes its origin, doubtless, to Byzantine models. The whole building is executed in brick, the bricks measuring, according to Mr. Wild, 7½ in. by 2½ in. by 1⅝ in. thick, with thick mortar joints, the whole being covered with stucco.

The mosques succeeding Ibn Touloun are "El Hakem," 991-1014 A.D., built with piers; El Azhâr, with columns (subsequently rebuilt); El Dahir, 1267 A.D., with piers; and Marydany, 1345 A.D., all with their aisles running parallel to the Mecca wall. In 1356, A.D., however, a new plan is evolved, which shows the immense progress made in construction. In the mosque of Sultan Hassan the aisled arcades are replaced by vast recesses or transepts, vaulted with pointed barrel vaults. Mr. Poole informs us that these recesses were allotted to the Malakis, Hannafis, Shafitis, and Hanbalis sects respectively. The great transept in the Mecca side is 69 ft. wide, 90 ft. deep, and 80 ft. high to the crown of the arch. This plan was subsequently copied in other examples, those of the mosque of Sultan Barkouk in Cairo, El Ghoury, and Kaitbey, outside Cairo, amongst others. There is another feature in the plan of mosques to which I should now direct your attention, viz., the dome. As Mr. Poole observes, however, "a dome has nothing to do with prayer, and therefore nothing with a mosque. It is simply the roof of a tomb, and only exists when there is at least a tomb to be covered, or where it was intended that a tomb should be." "It happens, however, that a large number of the mosques of Cairo are mausoleums, containing the tomb of the founder and his family." "Most mosques with tombs have domes, but no mosque that was not intended to contain a tomb ever had one in the same sense." Mr. Poole ascribes the origin of the dome to the cupolas which surmount the graves of Babylonia, but points out that it was never used by the Mahometans to cover their temples of prayer.

The earliest dome in Egypt is probably that of Imam-es-Shafei, built by Saladin, outside Cairo, but it has been so often restored that one cannot trust to its antiquity. In Kalaoon and Sultan Hassan the tomb is added to the plan of the mosque, being a subordinate feature, but when once introduced it becomes the favourite. In the tomb mosque of Sultan Barkouk, however, we find a variety of plan in which the tomb was the chief feature and the mosque of second importance. Here the tombs are placed on the south-east side of the building, the Mecca aisles standing between them and the usual court with aisles, entrance portals, and minarets on the north-west. The covered portions are sustained by piers with flat cupola vaults in brick. The last mosque found in Egypt to which I shall refer is that of Sultan Kaitbey, outside the walls, one of the most graceful monuments of the style. Its plan is similar to that of Sultan Hassan, but being of much smaller dimensions, the court is covered over and lit by a lantern. The great transepts or niches are not vaulted, but covered with timber roofs with beams richly painted and carved, and the spaces between sunk with coffers.

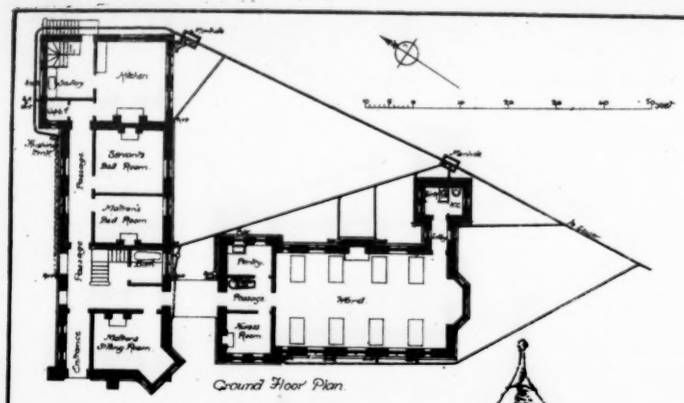
There are no palaces of ancient date in Egypt, and the only other architectural features which demand notice are the gateways and walls, which are of simple ashlar masonry, the only decoration being the archways, the orders of which are enriched with conventional ornaments and shields carved in relief. The sebeels, or drinking-fountains, are of various dates; they are placed at the angles of streets, or built out into the street like a bow window. Bronze grilles of various designs are fitted in the openings, and on the upper floor is invariably a school.

Mr. Poole's work on the "Arts of the Saracens" contains plans of the domestic architecture of Cairo, and seeing that, as a rule, the features there found are derived from Mosque architecture, there is no reason to direct special attention to it.

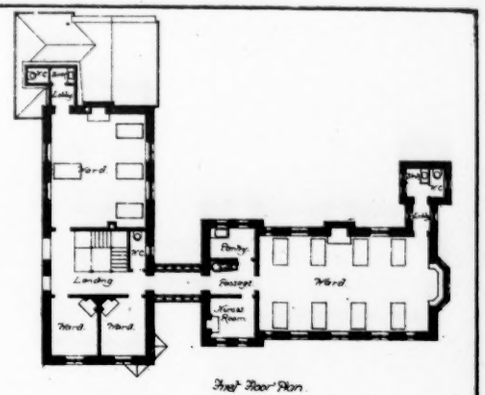
Their architecture is confined to the entrance court, on one side of which is frequently found an open loggia, or a first floor with two or three pointed arches carried on columns.

Both in this court, however, and on the external front are innumerable examples of the feature known as a Mushirabeeyeh,—an oriel window of elaborately carved or lathe-turned woodwork, carried on timber corbels, which are generally in imitation of stone vaulting: the term given to this feature is derived from a miniature oriel window projection, in which is placed the water-bottle. These water-bottles are of porous clay, and the wind passing through the lattice work causes a rapid evaporation of the moisture which exudes through the bottle and keeps the water cool. These mushirabeeyeh, and other projecting features of a house on corbels, form all that is architectural in the streets.

The principal apartment in the house is called a mandarah, which is used for the reception of guests. It consists of a lofty hall with fountain in the centre, and deep recesses on two of its opposite sides, both raised a foot or so above the level of the hall; round the more important of these is placed the divan. The walls are decoratad with marble and tiles to a height of about 7 ft. or 8 ft. from the floor, intercepted at intervals by recesses or cupboards with elaborate panelled doors, and sometimes with wall fountains. The room is lit chiefly by windows in the upper part of the hall, these windows being formed in plaster, having a sort of tracery with elaborate patterns. The glass is of various colours, and the section of the plaster is so contrived that, placed as these windows are high up in the hall, the reflection



Ground Floor Plan.



First Floor Plan.

PHOTO-LITHO. SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

THE SANATORIUM, KING EDWARD VI. SCHOOL, SHERBORNE.—Mr. Keith D. Young, F.R.I.B.A., Architect.

DENNINGTON CHURCH SUFFOLK

SECTION LOOKING EAST AND DETAILS

Scale to mouldings, enclosing sc.

MOLDING AT A

MOLDING AT B

MOLDING AT C

MOLDING AT D

MOLDING AT E

MOLDING AT F

MOLDING AT C

PURLIN 6"×4"

WALL PLATE 3"×3"

STENCILLINGS ON LOWER PART OF SCREEN

SILVER ON RED

BROWN ON GREEN

NOTE ALL STONE JOINTS ARE FROM MEASUREMENT.

Inside of Screen

F. REMAINS OF ROOD SCREEN

ALTAR RAIL

PHOTO-LITHO. SPRAGUE & Cº. LONDON.

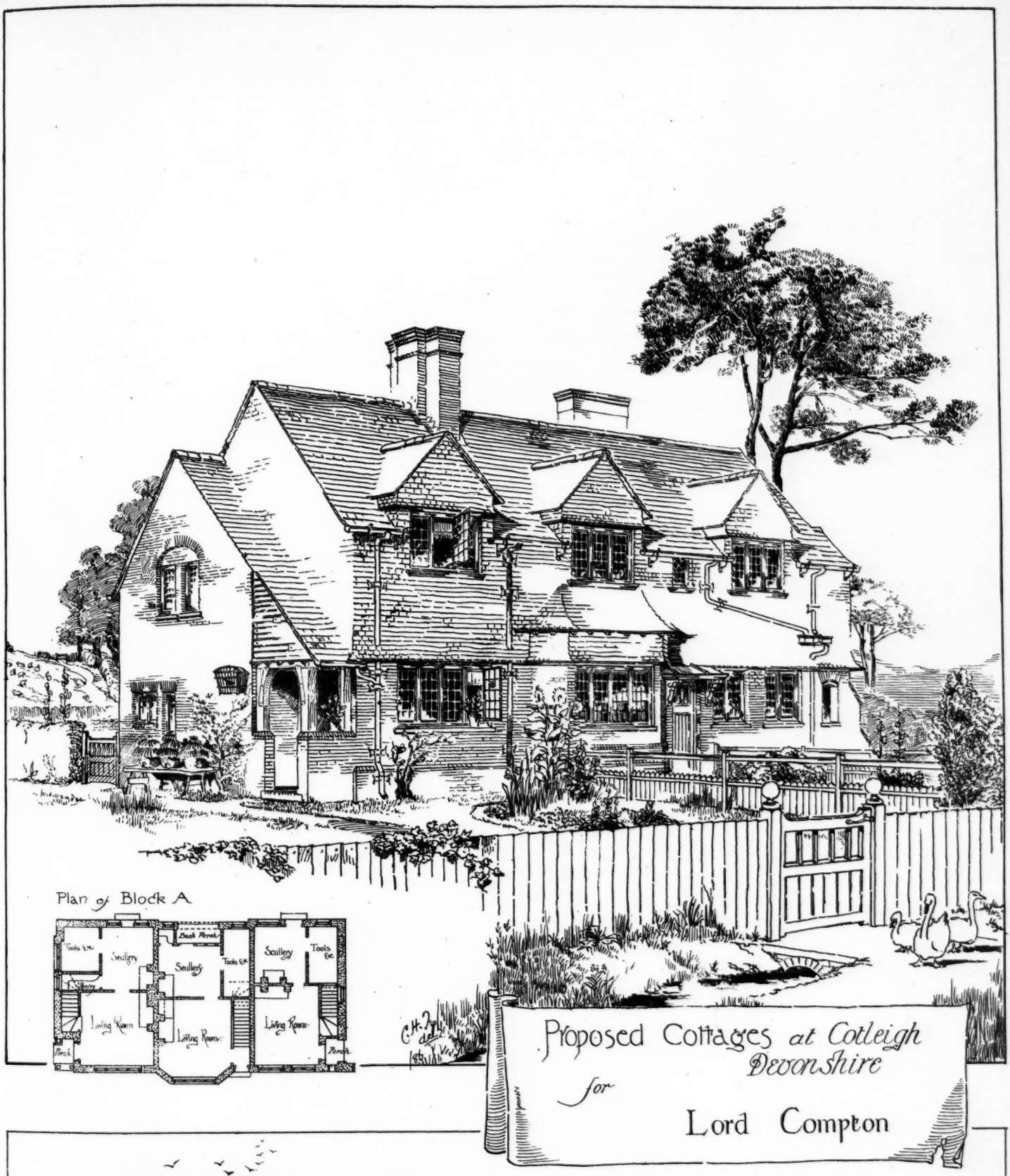
MEASURED AND DRAWN BY Mr. H. PERCY ADAMS.

R.I.B.A. Silver Medal, 1888.

R.I.B.A. Silver Medal, 1888.

PHOTO-LITHO, SPRAGUE & Co 22, MARTINS LANE, CANNON ST, LONDON, E.C.

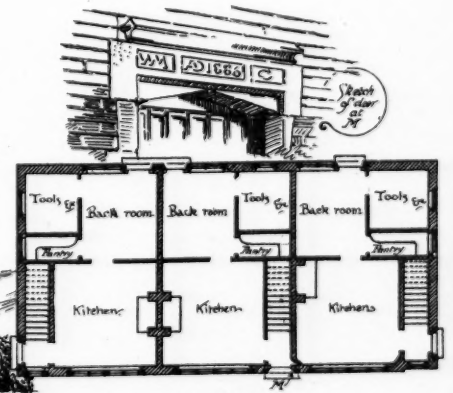
BANKING PREMISES, RETFORD.—Messrs. Chorley and Connon, Architects.



Plan of Block A

Proposed Cottages at Cotleigh Devonshire for Lord Compton

Elevation of Block B



Plan of Block B

Scale to both Plans

Scale of feet

C. Harrison Townsend Archt.

PHOTO-LITHO. SPRAGUE & Co. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

only of the light coming through the glass is seen, which gives a softness and a beauty to the light, which must be seen to be realised. The ceilings are all of wood, with richly decorated beams, coffers between, and a richly painted coved cornice between the soffit of the cornice and the top of the 8-ft. dado is a space which may have been left plain, relieved, or covered with diaper; now, the only examples I have seen are decorated with modern landscapes of inferior Italian work.

Fergusson in his history commences his description of Mahometan architecture with Syria. I have elected to describe that in Egypt first because it possesses much more variety, and the plans of tho mosques there are of the types most generally adopted for Mahometan mosques in all countries. I also wished to avoid if I could the disputed question as regards the date of the building known as the Mosque of Omar, in which I am inclined to agree with Fergusson, that its date is long prior to the Hejira, and could only have been built in the third or fourth century.

I am also very sceptical as to the pointed arches in the Mosque of El Aksah, said to have been built by Abd-el-Malek in the sixty-ninth year of the Hejira (691 A.D.). The plan of this building, which resembles an ordinary basilica of nave and aisles, with double aisles added on each side, is at such variance with the generally accepted plans of Mahometan mosques, that I am inclined to believe either that to the springing of the arches the building is of prior date to the Hejira, or that the Mahometans obtained the assistance of Christian architects and workmen, who built according to their own custom, and not according to the principles observed in other Mahometan countries. The Mosque of Damascus, again, is known to be a part of the church built by Theodosius, of which the nave, and aisles, and transepts still remain running west to east. To this on the east side the nave and aisles have been repeated, and on the south wall of the transept has been placed the Mihrab or niche pointing out the direction of Mecca. The aisles, therefore, all run parallel with and not at right angles to the Mecca wall. The addition of a court with arcades round on the north side completes a plan not otherwise dissimilar from that of Ibn Touloun and other mosques in Cairo.

The Great Mosque at Mecca (from which it was at one time thought that the plans of the Egyptian and other mosques were taken) is necessarily different from all others, because the Kaabah, to which all the niches in other mosques turn, stood in its centre. The arcades or aisles which surround the court are known to have been built by Egyptian and Constantinopolitan sultans in the sixteenth and seventeenth centuries; in fact, the whole mosque was in 1626 nearly destroyed by a torrent, and the sacred walls of the Kaabah itself were thrown down and had to be rebuilt from their foundation.

I am, therefore, able at once to go on to Kairwan, in Barbary, the mosque of which has been described by Mr. Carpenter in the paper read before the Institute in 1884.

The Mosque of Kairwan was built in A.D. 675, the position of the kiblah having been correctly ascertained by the Emir Akbar. There have been subsequent re-buildings, so that it is not possible to be quite certain of the original plan. As it stands it forms an oblong, 427 ft. by 225 ft., with a prayer-chamber at the Mecca end, of seventeen aisles, eleven bays deep: more than twice the depth, therefore, of Amrou. On the north side and the other two sides of the court are double aisles, with a minaret in the centre of the building.

The entrance porches lead to the centre of the prayer-chambers, one on each side. The columns employed to carry the horseshoe arches are of different heights, 22 ft. in the centre aisle and 15 ft. in the side aisles, the Mihrab being at the end of the central aisle. (In the mosques of Amrou and Touloun there is no difference between the central and side aisles.) Both columns and capitals at Kairwan were taken from ancient Roman buildings, and, as at Amrou, the arches are tied together by wooden beams at their springing.

The Mosque of Cordova was built by Abd-el-Rahman in A.D. 786-90 in imitation of the Mosque of Kairwan. There were eleven aisles of twenty-one bays, the central one slightly wider than the other. The materials were taken from earlier buildings, and, as it happened that the columns and caps were not considered high enough, above the horseshoe arches are built a second row of arches which carry the barrel vaults. To this mosque El Hakeem added twelve more bays in depth at the Mecca end (A.D. 962), and in 985 El Mansour added eight more aisles of thirty-three bays on the east side. Part of the open court on the north side dates from Abd-el-Rahman's foundation, 690, and part from El Mansour.

Persia and India.

With the exception of the tombs of Zobeide and of Ezekiel, near Bagdad, of unknown date, and a hospital at Erzeroum, twelfth century, the Mahometan style in Persia commences in the thirteenth century, when Ghengis Khan built the mosque at Tabreez in 1294. The drawings given of this in Texier's "Arménie et la Perse" suggests that, although no typical plan of the style had been then evolved, some considerable advance had been made in those decorative features which constitute the Saracenic style. The plan is that of a Byzantine church, with central dome, aisles, and sanctuary. The portal, however, consists of a lofty niche vaulted with semi-domes and stalactite pendentives, and similar in many respects to the well-known example of Sultan Hassan, built sixty years later. It is built in brick, and covered internally and externally with glazed bricks of various colours, wrought into the most intricate patterns of interlacing ornament and Cufic inscriptions.

The only building of a similar description which I have seen is the Mosque of Omar at Jerusalem, which is, as you may know, entirely covered with Persian tiles. The dazzling and perfect beauty in point of colour is not to be surpassed, but speaking from an architectural point of view it possesses the fatal sin of not showing its construction. The bricks and tiles are only a veneer, and, although in certain features such as the portal and the dome, where the construction is at least suggested, the tendency is to trust to decoration alone to produce architectural effect. For internal decoration, where cornices and projecting features are out of place, the employment of such decoration is not only allowable, but is not at variance with accepted principles, and the tomb of the Sultan Khodabendah, at Sultanieh, illustrated in Texier's "Arménie et la Perse," must be one of the most beautiful interiors in existence. Here the dome had not arrived at that bulbous form which we find in later examples.

The great mosque at Ispahan, 1585, is a good illustration of the danger attending a too free use of surface decoration: strip the walls of their tiles and nothing is left except square box-like forms with pointed arched openings of indifferent form. The interior, however, owing to the variety of its features and the varied play of light and shade given in the semispherical vaults of its transepts and niches and the vaulted aisles, constitutes, probably, one of the most beautiful monuments of Mahometan art. The plan is similar in one sense to that of Sultan Hassan, a large open court with large niches in the centre of each side flanked by arcades. One of these niches forms the entrance to the court, and behind the others are tombs surmounted by bulbous domes.

The Mahometan architecture of India would require at least a paper to itself. Fergusson devotes more than one hundred pages to it, and frequently deplores the insufficiency of data to describe it. "The Saracenic architects showed in India," he says, "the same pliancy in adopting the styles of the various people among whom they had settled, which characterised their practice in the countries already described. It thus happens that in India we have at least twelve or fifteen different styles of Mahometan architecture, and if an attempt were made to exhaust all the examples, it would be found necessary to even a greater number." He describes thirteen divisions, of which the following are the characteristics of some. The history of Mahometan architecture in Northern India commences at the end of the twelfth century, under the Turkish, or, as they are known, the Pathan dynasties; the mosques of old Delhi and Ajmir being the earliest examples. The conquering tribes employed their new subjects to carry out their ideas, adopting for the mosque at Delhi the colonnaded courts of the Jaina temples, which served their purposes as regards plan, but building a new wall on the east side, with niches or mihrabs to point out the direction of Mecca, other walls round, and a magnificent range of arches on the western side, the three larger ones being 22 ft. wide and 52 ft. high. The construction of these arches is very singular, suggesting that the Mahometan conquerors insisted on an arch because it was the correct typical form of their religion; but they left their Jaina subjects to build in their own way. The arches are semicircular up to about two-thirds of their height from the springing, and built in horizontal courses. Then come two or three half voussoirs and half horizontal stones, the end being closed in with flat horizontal slabs, meeting in a point, and sometimes an indented form, suggesting the Flamboyant curve.

The Mosque at Ajmir is again an adaptation of a Jaina temple, with a screen of arches in front of the prayer-chamber; the construction very similar to that at Delhi, except that all the courses are horizontal.

In tombs of the later Pathan styles we find the pointed arch used, resting on piers, but enclosed in a rectangular frame, which suggests that horizontal courses were employed. To the pendentives in these mosques I shall refer later on. In Jaunpore the chief mosque, the Jumna Musjid, still clings to the trabeated and bracketed styles, with magnificent archways, enriched with the peculiar cusped arch, which seems to have originated in India. The earliest example of the cusped arch is found in a temple at Marttand, in the Himalayas, which may date from the ninth century. In this temple, and in later examples, the cusped arch is used decoratively and not constructively.

In the province of Guzerat, the mosques at Ahmedabad are, according to Fergusson, the most elegant and characteristic of the Indo-Saracenic styles. The plan of the Jumna Musjid is similar to that of earlier Egyptian mosques, the chief notable feature being the number of domes in the prayer-chamber. These are shown in the elevation, but the section given by Fergusson is not a dome, so that I am unable to say how they are formed. The arch is inserted again in the façades here, not because it was required, but as a symbol of faith. In tombs the dome is apparently introduced for the same reason.

In Malwa, the Ghoree dynasty of Mandu enriched the country with various monuments, amongst which the Jumna Musjid of Mandu, 1405–1432, is the most remarkable mosque. It measures 290 ft. by 275 ft., and is similar in plan to the usual type, viz., a courtyard, with five aisles on the Mecca side,—three on the sides and two opposite the prayer-chamber. The peculiarity in the architecture here consists,—1st, in the fact that, although built in a Jaina country, when the traditions of trabeated construction still obtained, they employed pointed arches throughout, and even their domes are carried on pendentives.

In Bengal, having nothing but brick, they were obliged to employ that material everywhere, and Fergusson points out that they invented a new form of roof, which had an important influence on the Mahometan and Hindu styles in modern times. The roof referred to is curvilinear in form, and is evidently copied from a framework of bamboo and thatch. (It is curious to note, as has been pointed out to me by Mr. Simpson, that in the early Buddhist buildings, the Chaitya, or assembly-hall, takes its form and decoration from earlier buildings executed in wood, with curved beams carried on purlins and posts, and this wooden construction is carved in the solid rock as a decoration. The Lycian tombs at the British Museum afford other instances of direct copying of wooden construction.) This Bengal roof is not of beautiful form, but it becomes generally adopted from 1650 onwards.

The mosque at Gaur is remarkable for the massive solidity of its piers and arches, and stands out in remarkable contrast to the somewhat slight architectural arcades of other Saracenic countries.

At Kalburgah there is no open court; all is covered over, light being admitted by the pointed arch openings in the external walls, and small openings in the small cupolas covering the site.

It is, however, in Beejapore that we come to a style of architecture built with a higher aim, and in the Jumna Musjid we find the dynasty of the Adil Rahis striving to develop a pointed arch and domical style with some remarkable results. The plan of the mosque is

similar to the usual type except that the wall opposite the prayer-chamber was never built. The aisles of this chamber are five deep, and in the centre and occupying a square space of three bays each way is the earliest instance, 1557-74, of what is known as the Beejapore dome. Instead of throwing arches across the angles at 45°, they are carried to the second pier, and form a series of intersections on which the dome rests. In the tomb of Mahomet at Beejapore this scheme of construction is carried out to a much larger scale, the diameter of the hall being 130 ft. by about 175 ft. to the soffit of the dome. A complete description of this building and of its constructive qualities is given by Mr. Fergusson in a paper read before the Institute, to which I must from want of time refer you.

The architecture of the Mogul emperors is the last phase of Indo-Saracenic art I shall have to call your attention to; and the monuments erected by Shere Shah, 1534-1545; Akbar, 1556; Jehangir, 1605-28; and Shah Jehan stand forth among the most brilliant examples of the work of the Moslem conquerors. Of the work of Shere Shah little remains but the record, but in Akbar's chief work, the Mosque of Futtehpore Sikri, the entrance gateway is certainly one of the finest efforts of man's genius. To this I shall refer later on.

The absence of illustrations and want of time prevent my attempting to describe the Great Palace at Delhi (a palace which measures, exclusive of its gateways, 1,600 ft. by 3,200 ft.), and the description which is given of the Taje Mehal at Agra by Mr. W. Emerson in the Institute *Transactions* enables me to pass by that building, otherwise probably well known to you. Those of you who visited the exhibition at the Grosvenor Gallery of the great painter Verestchagin last year may have had the opportunity of seeing paintings of the later buildings of Shah Jehan's reign, notably the Pearl Mosque, one of the most elegant and beautiful buildings erected by the Moguls.

I come now to the last phase of the Mahometan style to which I shall have to draw your attention, that of the Turks in Constantinople. As Fergusson remarks, "Had the Turks obtained earlier possession of Constantinople it is possible that the architecture might have taken a different form from that in which we now find it."

In 1455, however, modern reaction in design had set in, and the Italian Renaissance was commencing to influence Europe. Be that as it may, the influence which the Mosque of St. Sophia exercised on its new possessors (seeing that the Mahometan conquerors have been ever ready to adopt and accept a pre-existing style) was not without its good effect in prescribing the forms which mosques should take; and, without entering into the first efforts made, we have only to look at the mosque erected by Suleiman the Magnificent in 1550-55,—the Suleimanie Mosque,—to see that when a fine model is taken the result is not likely to be quite contemptible. So far from that, the interior of this mosque is the finest production of the sixteenth century. The disposition of the Mosque of St. Sophia is adopted almost in its entirety. The plan measures nearly a square of 215 ft. In the interior is a dome 86 ft. in diameter as against 100 ft. at St. Sophia, and 156 ft. the height of the dome as against 175 ft. in the latter. In its section, the upper part, the cupola, is more accentuated; and the screen of three arches in the place of the double row of superimposed arcades in St. Sophia lessens the scale of the former. As is the case with St. Sophia, the exterior is wanting in architectural beauty owing to the want of height of the dome, the badness of the materials used, and the poverty of the minarets when compared with those of Egypt.

Besides this mosque, that of Sultan Ahmed (A.D. 1608), of about the same size, with simple piers to carry the dome, and four half-domed recesses instead of two, is a fine example. The exterior also is better arranged in the groups of its smaller domes. Both of these mosques have large courts preceding them, with arcades round and fountains in the centre. Of the architecture of Constantinople I have little to say, except that it is mostly modern and execrable in taste. There still exist, however, a number of fountains, of varied design, with much detail and beautiful ornament on them.

This terminates the first portion of my paper, in which I have given a general description of the various phases of the style, and endeavoured to point out that they have arisen mainly from the plan and requirements of the religion.*

THE PLANNING OF SCHOOLS.

In reporting on the plans submitted in a recent competition, Mr. E. R. Robson, F.S.A., gave the following description of the origin of the central hall principle of planning schools:—

"I may premise that the planning of schools of all kinds has during the last twenty year. been gradually but completely revolutionised It has, in fact, been struggling to keep pace with the improvements in methods of teaching which have marked the same period. Schoolmasters had found out, among other things, that good teaching could only produce satisfactory results when carried on in separate rooms. Then came an increase in the number of class-rooms, and in existing buildings the school hall, which had been hitherto used not only for speech-day, examinations, and morning assembly, but also for several classes all carried on at the same time, became to some extent disused for the work of separate classes. This led to an evil of another kind, speedily discovered. The addition of class-rooms from time to time had resulted in an arrangement of plan straggling, inconvenient, laborious to work, and almost impossible effectually to supervise. Many grammar schools had had their history thus written, and a wide-spread desire for improvement in plan arose as the consequence.

An accident solved the problem about fifteen years ago. A Board school of one story had been erected at Haverstock-hill, all the rooms having been made to surround a central covered court or playground. Before the school could be opened the advantage of the central hall for educational purposes was perceived: warming appliances and a wooden floor were provided forthwith, and the principle thus discovered has since been received and acted upon each year, more and more in proportion as it has become known. I do not hesitate to say that at this day the consensus of opinion among the best authorities is entirely in its favour.

Its value consists (1) in greater economy of building, for the walls of the hall are already provided in building the class-rooms; (2) in greater power of control on the part of the head-master, for he can see so much more of the whole from any one point; (3) in greater facility of assembling and dispersing the pupils, for they emerge into or separate from a spacious hall; (4) in the abolition (as far as possible) of corridors where boys can misbehave unseen. The class-rooms surrounding the hall should themselves have gangways at the inner side of the desks, and communicating doors, so that the head-master can pass from one to another with facility without re-entering the hall.

I should here point out that the central hall principle has nothing in common with German systems of planning, as has sometimes been assumed. So far as I know there is no such thing as a central hall in any school in all Germany. The system of teaching there followed does not need it; the hall is commonly at the top of the building, and is only used three or four times a year.

In a German school the hall may possibly be dispensed with. In an English school, on the contrary, it is essential, because needed for daily assembly and prayers, periodical examinations, the annual speech-day, and occasional lectures, concerts, and entertainments. It is the very pivot of the whole work, and should naturally be in the centre. Its position there alone enables the school-planner to get rid of corridors.

In America, where the systems of teaching resemble those of England more than those of Germany, I found, during a visit some years ago, that the plans of schools were mainly borrowed from Germany, and that the hall was commonly at the top of the building. My correspondence with that country since my visit shows that the first improvement came by placing the hall on the first story, but that now a further step has been taken. Some schools have already been built with a central hall on the ground floor, and the principle is already known as the best."

* To be continued.

THE SANITARY REGISTRATION BILL.

A Public Conference to consider this measure was held on Saturday last in the Hall of the Society of Arts, Sir Joseph Fayrer, K.C.S.I., in the chair. Mr. Mark H. Judge, A.R.I.B.A., read the following paper:—

The Sanitary Registration Bill of 1888 is the outcome of the Bill promoted in 1886 by the Council of the Sanitary Assurance Association, which was introduced to the House of Commons in that year by Dr. R. Farquharson, M.P. The details of the measure have undergone considerable modification, and, I venture to think, improvement, but the principle of the proposal remains unaltered.

The object of the Bill is twofold,—(1) it seeks to protect the community against unsanitary conditions in public and semi-public buildings; and (2) it encourages attention to the sanitary state of private dwellings.

The principle on which the Bill is based is the same as that on which the Vaccination Acts were based,—viz., the enforcement of a regulation by the State in the interest of the public health in such a way as to secure a minimum of official interference with individual freedom of action. Parliament when it decided to enforce vaccination, decreed that it should be open to individual citizens to employ such qualified practitioners as they might prefer. And the Sanitary Registration Bill, while insisting on certain sanitary conditions for buildings of a public or semi-public character, in a similar manner leaves the owner or occupier free.

With sanitary practice there is a difficulty which does not occur in the matter of vaccination, viz., that at present we have no recognised qualification for sanitary practice. This difficulty the Bill endeavours to meet; but, before we consider whether it does this in a satisfactory way, I would call attention to what occurred in 1858, when the Medical Registration Act was passed. At that time the medical profession was as heterogeneous a body as sanitary practitioners are now. After the passing of the Medical Registration Act, the right to practise was confined to those who proved their qualification, but all who were in practice prior to 1858 were registered as qualified without examination, while dentists who were in practice as late as 1878 were registered as qualified dentists without examination. These precedents should be borne in mind when considering the provisions of the Sanitary Registration Bill.

For a long time past there has been a growing feeling that the existing law has failed to secure reasonably healthy conditions in our large towns. And this was very forcibly exemplified in 1885, when Lord Salisbury's Government introduced the Bill which eventually became the Houses of the Working Classes Act, 1885. The Bill proposed that,—

"Whereas by existing law there is implied a condition on letting a furnished house that it is reasonably fit for human habitation, and it is expedient to extend such implication to the letting of unfurnished houses; be it therefore enacted that, in any contract for letting for human habitation an unfurnished house, or part of an unfurnished house, there shall be implied a condition that the house is in all respects reasonably fit for such habitation; and in the event of a breach of such condition as above mentioned, in the case either of a furnished or unfurnished house or any part thereof, any inmate of such house who suffers any loss or injury to health or otherwise in consequence of such breach, shall be entitled to recover damages from the person responsible for such breach."

The need of legislation for the purpose of improving the sanitary condition of our large towns was soon made manifest by the opposition this proposal met with from large building societies, which finance the worst class of speculating builders, and which are thus interested in a vast amount of property,—property which, it is to be feared, is not reasonably fit for human habitation. The Government gave way to the opposition, and this bold attempt to prevent the adulteration of houses was whittled away, and the Act simply provides that—

"In any contract made after the passing of this Act for letting for habitation by persons of the working classes a house or part of a house there shall be implied a condition that the house is at the commencement of the holding in all respects reasonably fit for human habitation. In this section the expression 'letting for habitation by persons of the working classes' means the letting for habitation of a house or part of a house at a rent not exceeding in England the sum named as the limit for the composition of rates by section 3 of the Poor Rate Assessment and Collection Act, 1869, and in Scotland or Ireland 4*l*."

Here, in an Act of Parliament, we have it stated by implication that, so far as the law is concerned, buildings may or may not be reasonably fit for human habitation when they are not

let to persons of the "working classes." Thus it has become more than ever necessary for all who are interested in sanitary improvement to do something to remedy the present unsanitary state of things, and I venture to think that the Sanitary Registration Bill of 1888 is a wise and practical measure, which, if passed into law, will do an immense amount of good.

The provisions of the Bill are very simple and direct, so that no great legal knowledge is necessary to understand the amendments in the law which it is intended to bring about by means of the Bill.

The Local Authorities charged with the administration of the Public Health Acts are to be made with the Sanitary Registration Authorities, with the Local Government Board at their head, in England and Wales. In other parts of the United Kingdom the corresponding authority to the Local Government Board is to stand in the same relation to the Local Authorities in all matters as the Local Government Board will to the Local Authorities in England and Wales. It has been suggested that the Registrars of Births and Deaths, under the Registrar-General, should carry out the work of registration; but surely the sanitary registration of buildings is too important a matter to hand over to the district clerks of the Registrar-General, and the Local Authorities under the Public Health Acts appear to be just the bodies on whom the responsibilities connected with the carrying out of the Act should devolve.

Each Local Authority is to appoint a Sanitary Registrar, who is to issue certificate forms for all buildings, which forms are to be returned duly filled in and attested by a Licentiate in Sanitary Practice. The certificates are to be deposited with the Local Authority.

Section 7 of the Bill defines who shall be Licentiates in Sanitary Practice, and as this is of the utmost importance I will quote the section :—

"The Local Government Board, or corresponding authority, shall issue Licences in Sanitary Practice to the following persons and corporations, that is to say—(1) Members of the Royal Institute of British Architects, Members of the Institution of Civil Engineers, Members of the Royal Institute of Architects of Ireland, Members of the Association of Municipal and Sanitary Engineers and Surveyors, and Members of the Surveyors' Institution, who are registered in accordance with this Act as qualified in Sanitary Practice. (2) Architects and Civil Engineers who have been in practice five years at the passing of this Act, and who shall, before January 1, 1890, prove to the satisfaction of the Local Government Board or corresponding authority that their practice as Architects or Civil Engineers has been a *bonâ-fide* one, and has included the designing and carrying out of constructive Sanitary Works. (3) Sanitary Associations incorporated by Licence of the Board of Trade, provided that their certifying officers be registered as qualified in Sanitary Practice in accordance with this Act. (4) Medical Practitioners registered as qualified in Sanitary Science. (5) Persons who are Medical Officers of Health at the passing of this Act. (6) Persons who at the passing of this Act hold appointments as Engineers or Surveyors under the Public Health Acts, provided they are Members of one of the Institutions mentioned in sub-section 1 of this section. (7) Such other persons as are, in the opinion of at least five Examiners, appointed by the Local Government Board or corresponding authority, qualified to design and carry out constructive Sanitary Works."

It is further provided that the governing body of each institution mentioned in subsection 1 of section 7, which I have quoted, can only have their members registered as qualified in sanitary practice after examination, and provision is made for the payment of fees to meet the cost of the examinations.

Section 7 has been most carefully considered, and the promoters of the Bill have had the advantage of the criticism of opponents as well as of supporters of the measure, with the result that the section as now drawn may reasonably be expected to receive the support of all who desire to raise Sanitary Practice from the anomalous position in which it now finds itself.

Architects, engineers, and surveyors who are members of the Institutions mentioned in subsection 1, and who pass the examinations provided for by the Bill, must be considered as qualified to practise.

Then, with regard to those architects and engineers who have been in practice five years at the passing of the Act, surely every precaution has been taken when, in addition to their five years' practice, they must satisfy the Local Government Board that such practice has included the designing and carrying out of constructive sanitary works.

As to the sanitary associations mentioned in sub-section 3, it should be borne in mind that these are an additional protection to the public. They are not to stand in the place of the Licentiates in Sanitary Practice, seeing that their officers must first be qualified under the Act. The associations included in the Bill are only those which are incorporated by licence of the Board of Trade, of which at present there are only two. In considering this part of the Bill, there is a tendency to forget this, and to imagine that the many private firms and companies trading under the name of Sanitary Associations are included.

The medical practitioners, Medical Officers of Health, and local engineers and surveyors, proposed to be admitted under sub-sections 4, 5, and 6, may certainly be entrusted with the responsibility attaching to a Licentiate in Sanitary Practice.

As to sub-section 7, which gives power to the Local Government Board to issue licences to other persons after examination, that is a provision which I trust will commend itself to all, as the Local Government Board is the one public department which has hitherto had charge of the public health work in England and Wales.

The Bill proposes to make it unlawful for any building to be certified unless the arrangements are in conformity with certain requirements mentioned in section 10. In other respects every Licentiate will be free to insist on his own standard of excellence, and thus the certificates will be of varying value according to the reputation of the Licentiate; but a moderately satisfactory sanitary condition will be insured in all cases where certificates are given.

Not the least important provision in the Bill is that in section 12, which says that any person certifying the sanitary condition of any building shall be deemed to have examined the arrangements certified, and for the issue of a false or fraudulent certificate shall be liable to a penalty not exceeding ten pounds, with or without forfeiture of right to certify as may be determined; and every person wilfully signing or sealing a false or fraudulent certificate shall be guilty of a misdemeanour, and punished accordingly.

After January 1, 1890, it is to be unlawful for any building to be used as a school, college, hospital, asylum, workhouse, factory, workshop, hotel, or lodging-house unless and until the sanitary arrangements have been certified in accordance with the Act. In the case of other buildings registration under the Act is to be voluntary. Penalties are to be enforced by the Local Authority in cases where the Act is disregarded, and it is to be left with the Local Authority to decide what buildings are being used for the purposes mentioned, subject to an appeal, in the first instance, to a justice of the peace, and after that to the Local Government Board, whose decision shall be final. The penalties may be enforced against either the owner, lessee, sub-lessee, or occupier, as the Local Authority may decide, except in cases where the lease or term of occupation shall have less than seven years to run at the passing of the Act, in which case the owner is to be responsible.

After a period of five years from the date of any certificate under the Act, such certificate is to lapse, and the building to which it refers is to be considered as uncertified, and thus a periodical inspection is provided for at intervals of not more than five years.

Statistics as to the working of the Act are to be regularly prepared, and sent in to the Local Government Board, and in order that these may be uniform all forms are to be supplied by the Local Government Board.

The Act is in no way to be construed as interfering with any of the powers which the Local Authorities possess under the Public Health Acts.

I have now explained what are practically the whole of the provisions of the Bill, in a way which, I hope, will help the conference in its consideration of the measure, and will conclude by proposing the following resolution :—

"A. That it is desirable that the law should forbid any building being used for public or semi-public purposes, unless and until the arrangements for the Water Supply, Drainage, and Ventilation of such building have been certified as satisfactory by some properly-qualified person; and that the provision of a Public Sanitary Register for the *voluntary* registration of private houses would be instrumental in promoting sanitary improvement.

B. That in the opinion of this Conference, the Sanitary Registration of Buildings Bill, 1888, will, if passed into law, have a great influence for good on the health of the community, and without pledging itself to all the details of the measure, this Conference authorises the Chairman to sign Petitions, asking Parliament to pass the Bil into law, with such modifications as consideration in Committee may show to be desirable."

After some discussion, the resolution was adopted, and the Conference terminated.

THE SOCIETY OF ENGINEERS.

THE first Ordinary Meeting of the Society of Engineers in the present year was held on Monday evening, February 6th, at the Town Hall, Westminster. Professor Henry Robinson, President for 1887, took the chair, and presented the premiums awarded for papers read during the year. The "Bessemer Premium" was given to Mr. Edmund Olander for his paper on "Bridge Floors"; the "President's Premium" to Mr. R. M. Bancroft for his paper on the "Renewal of King's Cross Roof"; a Society's Premium was also presented to Mr. E. C. Thrupp for his paper on "A new Formula for the Flow of Water"; and a Premium, awarded to Mr. R. J. Hutton for his paper on the "Stability of Chimney Shafts," was acknowledged for him by the Secretary in Mr. Hutton's absence from England. The death of Sir James Oldknow, an honorary member of the Society, was announced, and a resolution passed offering to Lady Oldknow the condolence of the Society. Professor Robinson then retired from the chair, which was taken by the President for this year, Mr. Arthur T. Walmisley. A unanimous vote of thanks to Professor Robinson for his services during the past year was then accorded, and

Mr. Walmisley proceeded to deliver his inaugural address, in which, after thanking the Society for the honour they had conferred upon him by his election to the chair, he traced the gradual progress of the Society, up to the present stage, from its initiation in 1854, out of "The College for Civil Engineers," which had then been established for some years at Putney, under the presidency of the Duke of Buccleuch. There were at the commencement of the present year in the Society 236 members, 82 associates, and 64 foreign members and associates, making a total of 382 corporate members. The Society was established under "The Literary and Scientific Institutions Act," whereby individual members are freed from financial responsibility, and many legal advantages are obtained. The President next briefly reviewed the meetings of the past session as an example of work done by the Society, and drew special attention to the summer vacation visits made to various works in progress. He stated the causes which had led to the extended use of steel as a constructive material in the manufacture of bridges, roofs, marine engines, as well as of steel chains; and referred to the efforts small engineering works were making to produce their own steel, as and when they want it, so as to obviate keeping a large stock in hand or the alternative necessity of giving small orders, which are seldom promptly executed. A comparison was drawn between the size and weight of iron plates sold at minimum market prices twenty years ago, and the present increased size and weight. The opinion was expressed that, in face of the competition with steel, the limits in those respects at which iron plates could be economically produced had now been reached. Contractors' plant, as the handmaid of civil engineering, was next described, the President showing the decreased use of staging and scaffolding in erection, compared with former times, and the increased application of cranes of various new forms to works in progress. Special forms of dredgers, acting as floating planing-machines, of earth-excavators, and of steam navvies, were alluded to, as well as the distribution, over iron manufacturers' yards, of steam and hydraulic plant. Water supply and drainage were entered into at some length. Valuable facts and statistics with reference to the drought of the past summer were given showing the importance of providing an adequate amount of storage in places where the water supply was dependent upon recent rainfall. The results of the rainfall at typical stations in the British Isles during the dry weather of last year, as furnished by Mr. G. J. Symons, F.R.S. (the best authority in this country upon the subject), had been put together in a tabular form by Mr. Walmisley, comparing the drought of 1887 with previous droughts. The remarkable feature of the dry weather during the months of June and July last year was seen to be the number of continuous days during which no rain fell. While many towns had to exist upon short supply, no difficulty had been experienced in the metropolis, and the London Water Companies continued their usual amount of pumping uninterruptedly. The drainage

works at Ealing and at Acton, which had been visited by the Society last October, and also the new precipitation works in course of completion by the Metropolitan Board of Works at the Northern Outfall, were described in detail. The effect of the transfer to municipal and local authorities of various undertakings, which had some years since been executed by private enterprise, was pointed out. Steam and electric traction, and the extended use of cable tramways since their introduction in 1873 into San Francisco, and about 1884 at Highgate, were seen to be working well where they had been employed. Hydraulic machinery, as in use at different docks and for lifts of various kinds, was fully described, and the introduction in Birmingham of compressed air as a motive power was expected to produce good results. Increased speed has been attained at sea with financial success by the adoption of triple and quadruple expansion engines in high-class steamers. The necessity of maintaining our coaling stations in working order was also insisted upon. The President, having dwelt upon the future prospects of the profession and of trade, pointing out the necessity of a personal inquiry into the requirements of foreign markets, without which catalogues were too stereotyped to ensure success, in conclusion addressed the younger members of the Society, urging that no day should be wasted, as no experience was fruitless.

THE ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

ANNUAL DINNER.

The fifth annual dinner of this Association was held on Saturday evening last at the First Avenue Hotel, Holborn, Mr. Edwin Chadwick, C.B., President, in the chair. The usual loyal toasts having been given,

Major-Gen. Webber, R.E., responded on behalf of "The Army and Navy," and referred to the value of sanitation in the Queen's forces, not only as a means of maintaining the health of the soldiers and sailors themselves while serving in the field or on board ship, but as a gospel of cleanliness likely to be intelligently propagated by the men amongst the community when they returned to their families and homes after the completion of their term of service. He claimed that although the soldier was primarily trained to be a life-destroying instrument, the cause of life-saving as represented by the work of the sanitarian had some distinguished military men amongst its votaries. He would name only three. Firstly, there was General Morin, who was at the head of the Conservatoire des Arts et Métiers, in Paris, whose book on "Ventilation" ought to be known to all the members of the Association. Secondly, he would name General Sir Joshua Jebb, whose work on the sanitation of prisons had been of so much service. Lastly, he would mention the name of Sir Douglas Galton, as to whose ventilating grate he (Major-General Webber) remembered being told by General Morin that, after experiments conducted by him and M. Tresca at the Conservatoire des Arts et Métiers, they had come to the conclusion that there was no other ventilating grate so effective.

Mr. J. B. Jerram, A.M. Inst., C.E., late Chairman of the Council of the Association, proposed "The Association," coupled with the name of the President. He referred with satisfaction to the continued growth of the Association and to the formation of branches. The Association sought not only to promote the interchange of knowledge and experiences between its members, but to improve the status and tenure of office of sanitary inspectors. In the public interest such officers ought to have something like "fixity of tenure" of office, so long as they were competent and honest. The impartial discharge of their duties ought not to render them liable to dismissal at the caprice of interested property-owners who might be members of, or have undue influence over members of, local authorities. Sanitary inspectors might fairly claim, also, to be put on a level with Poor-Law and other officials in the matters of superannuation in old age and of allowances to widows and orphans of men who lost their lives through infectious disease caught by them in the discharge of their duties (applause). But the success of the Association had not been achieved without the help of many well-known sanitarians, of whom first and foremost they must mention their distinguished and venerable chairman (applause). Another sanitary leader to whom the Association was much indebted was the late Mr. George Godwin, for so many years Editor of the *Builder*, and whose loss they had to mourn that evening (hear, hear). He was sure the members all deeply regretted Mr. Godwin's death, for he had helped them very much, and showed great interest in their work. When sitting on the Royal Commission on the Dwellings of the Poor, he took care that some representatives of the Association should be allowed to give evidence.—After some further remarks, in the course of which he said that the Association would carefully watch the proposed new Local Government Act, Mr. Jerram gave the toast of the evening, which was very warmly received.

Mr. Edwin Chadwick, C.B., in replying, said:—I must speak to you on our policy of sanitation, and state that I think "nothing done while aught remains to do"; for notwithstanding our last annual statement of partial progress, and the progress in action of the demonstrations of what may be done, they all concur in proving that much indeed remains to be done,—namely, the prevention of the continued annual slaughter of upwards of one hundred thousand men, women, and children, and of a money loss, as we may now estimate it, of one hundred and fifty pounds for each individual of that hundred thousand,—of which slaughter and loss full two-thirds fall with the greatest severity upon the wage-classes, together with some twenty cases of disability of working for every one of their deaths. Such is the great whole, exceeding in pecuniary amount and in human suffering every other condition with which party politics now deal. Such have been the political party pre-occupations of members of Parliament and others as to shut out information upon our subject, and to preclude the conception of its magnitude, and of its consequent claims for legislation. A well-known journal, the *St. James's Gazette*, speaking recently about the prospects of legislation for the ensuing Session and of the Local Government Bill, said, "Nobody professes to have any clear idea on the subject. Of course, we are told that one party wishes to make it democratic, and the other party wishes to make it official. But no one, who is not a mere party man, cares a straw about it. No meeting is held to demand it. There is an utter lack, not merely of agitation, but of the smallest interest in the subject." Although it overlooks the strong feeling rising in the metropolis and elsewhere against the wastefulness of ignorance and of "vestralisation," this appears to be a fair statement of party political ignorance on the condition of local administration,—an ignorance shutting out the knowledge of principles and economies of local administration, by which, collaterally, reductions of local burdens, especially in the agricultural districts, amounting to several millions of money, may be effected. It is, moreover true, as competent sanitarians know, that the general organised bodies of the wage-classes are left to believe that the great mass of sickness and excessive mortality,—for the relief of which they expend from their funds twenty-four millions annually, or three times the amount of the public poor-rates,—is a sacrifice for them of absolute and unavoidable necessity. The public mind is kept occupied with party political contests for position, or with single cases of dramatic interest, of passion and violence or bloodshed; whilst the great mass of causes which we know to be preventible are passed over as inevitable necessities, the fact of their preventibility being unknown. I wish to state the efforts that are being made by this Association against the deplorable obstruction due to this political darkness (hear, hear). The Council have adopted a carefully-prepared statement of sanitary experiences, which prove that more than half of the twelve millions of annual charges on the wage-earning classes are preventible, at about one-third of the cost, by efficient sanitary work, devised and executed by competent sanitary specialists; and that the preventive power of sanitation is demonstrated in a sufficient number of examples in action, to ensure to the wage-earning classes an advance of the duration of life and of working ability by at least five years; and that no less than ten years may be ensured to them if they live in habitations of the quality of the Prince Albert model dwellings. This practical exposition each sanitary inspector of the Association has been requested to give, with explanations, to the chief members of the friendly societies within his district, and to invite those chiefs to express, on behalf of their members, who are now voters, their wishes on the subject to the representatives of their district in Parliament of either party. These instructions are now in the hands of the inspectors of four or five hundred districts, including those of the connected associations of Liverpool and of Lancashire; and also those of the Sanitary Association of Scotland, zealously co-operating with us, under the presidency of Dr. McVail. Besides this movement of ours, another has been started with the like object, by the Sanitary Association of Manchester, under the leadership of Dr. Ransome, its chairman, for a federation of all the sanitary associations throughout the country to watch legislation on sanitary questions. With that association as a centre we shall zealously co-operate; for every combined exertion is required to inform ignorance, and to withstand the hostility of organised, though latent sinister interests. The next greatest concern for the advancement of sanitation in local administration, is the full and free local examination by the Boundary Commission, for on it, as appears to me, must depend the increased economy of local administrative arrangements.—Having dwelt at some length on results already attained by the organisation of local administration, especially in regard to the Poor Law, and indicating the need and most desirable course for further improvement, Mr. Chadwick continued:—Before terminating the expression of my views as to our present sanitary wants, let me mention some important news I hear from Lancashire, that the manufacturers there have it offered to them to have their steam-engines worked by gas, at two-thirds the price of working them by the wild flame of coal,—a plan which I proposed thirty years ago; and there is no doubt that this may be done, and when done, down will fall the big chimney which befouls all around with its smoke and dirt. From New York I learn that a plan is adopted which provides for the distribution of heat from a centre to houses a mile distant, distributing power for lifts and other purposes, and heat for cooking, and warmth for houses, and thus saving from an atmosphere of smoke. In the short span of life now left to me, I may not see the consummation of these great advances in sanitary science and the reduction of fog; the augmentation of production by suburban land drainage on the principle of "Circulation *versus* Stagnation," or the improved bodily and mental and moral training of children by the general application of the half school-time principle; but I shall have great consolation and pleasure in the confident anticipation, from the advances of our science, of the creation of a new and a healthier and happier population (applause).

Other toasts followed, the speakers including Dr. Alfred Carpenter, J.P., Earl Fortescue, Mr. Thomas Salt, M.P., Dr. B. W. Richardson, F.R.S., Mr. W. Vallance, Mr. Hugh Alexander, Mr. Hiram S. Maxim, and other gentlemen.

OBITUARY.

Mr. William Webster.—The late Mr. William Webster, whose death took place at his residence, Wyberton House, Lee, on the 1st inst., was born at Wyberton, a small village near Boston, Lincolnshire. Soon after his apprenticeship with Mr. Jackson, builder, of Boston, he commenced business on his own account in a small way at his native village, and as the natural result of his indomitable perseverance and untiring energy, his business soon increased to one of considerable importance in the way of church building and restoration in Lincolnshire, Nottinghamshire, and other counties. In this branch he executed many interesting works, one of the most important being the beautiful church of Algarkirk, near Spalding. His business increased rapidly, and finding himself in possession of a contract for works of considerable magnitude in building the Cambridgeshire Lunatic Asylum at Fulbourne, he determined to leave Wyberton, and reside at or near to this his principal contract. He adopted a similar course in building the Three Counties Asylum at Arlesey. At the conclusion of this and some smaller country works his

attention was drawn to the Metropolitan main drainage works, and, after tendering once or twice unsuccessfully, he obtained the contract for the Southern Outfall Sewer. He afterwards executed the three main pumping-stations, and a very considerable portion of the main sewers on both sides of the Thames; he also constructed a portion of the Victoria Embankment, the whole of the Albert and Chelsea Embankments, also an extension of the Embankment at the Houses of Parliament; and, while these heavy undertakings were being carried out, he took contracts for various other works, both in London and the country, some of the most important of which were the Essex Reclamation Works, the Holborn Viaduct Railway Station and Hotel, the Middle Level Outfall Sluice in Norfolk, Waterworks at Hampton, Middlesex; Gasworks at Poplar; New Bridge at Maidstone, and the strengthening and underpinning of Waterloo Bridge. His remains were interred in the family vault at St. Margaret's Church, Lee, on Tuesday last, in the presence of a large circle of friends who attended to testify their respect and to pay a last tribute to his memory.

THE TITE PRIZE COMPETITION.

SIR,—As Tite Prizeman for 1887, I think it right to add my protest against Mr. Pearson's letter to that of Mr. Paterson in your last issue [p. 89]. Mr. Pearson's wrathful suspicions may be allayed by learning that, though I studied my design (a Classical church) entirely in the studio of Mons. Pascal in Paris, I was not indebted to any of my comrades for a single line upon my drawings.

Perhaps if Mr. Pearson would give Paris a trial he might find his chances of success increased without diminishing the *bonâ fide* character of his work.

FRANK W. SIMON.

MIDLAND COUNTIES ASSOCIATION OF PUBLIC SANITARY INSPECTORS.

SIR,—The letter which appeared from Mr. H. Alexander in last week's *Builder* [p. 89], is written in a spirit which, as I have no desire to imitate it, I shall refrain from characterising. Those of our members to whom I have shown your report (*Builder*, January 21st) quite agree with me in considering it a correct, though somewhat brief, *resumé* of the meeting.

Your correspondent, however, requires, I think, to be reminded that at the meetings of all well-conducted societies, it is the custom for those members who find themselves in the minority to acquiesce, or defer to the expressed ruling of the majority.

That the decision of the meeting did not find the cordial acceptance of Mr. Alexander, is shown by the animadversions he casts at those who respectfully declined to accept or follow his leading on that occasion.

The great majority of the sanitary inspectors engaged in the practical administration of the Public Health Act, 1875, in our large provincial towns and municipal boroughs have, no doubt, both good and, what may be to them, sufficient reasons to account for their hesitation in joining as members, and their reluctance in becoming a branch of the (London) Association of Public Sanitary Inspectors, on the terms and upon the conditions as set forth in the rules of the latter body.

This being so, I would respectfully suggest that a conference of representatives of the various Sanitary Inspectors' Associations in the United Kingdom be convened and be held at as early a date as practicable, and at some convenient town or centre, with a view of considering an amendment of rules and of perfecting a union of our several organisations thereby upon a much wider and more thoroughly representative basis than has hitherto been the case.

The organisation should be national in its scope, comprising all sanitary inspectors and the like officials (other than medical officers of health) who are engaged in the administration of the Public Health, and Local Government Acts.

That this desirable unity may, ere long, be thoroughly consummated, is the earnest desire and wish of

FREDERIC BOOKER,
Chief Sanitary Inspector, Coventry.
February 6th, 1888.

Coast Guard Battery and Drill Hall, Stornoway.—The Admiralty have erected a new Coast Guard Battery and Drill Hall at Stornoway, N.B. Special attention has been paid to the ventilation, which is effected on the Boyle system, the latest form of the "self-acting 'air-pump' ventilator" being employed for the extraction of the vitiated air.

The Student's Column.

IRON.

VI.—THE REVERBERATORY FURNACE.

THE object of a reverberatory furnace is to subject the metal to the heat of the flame, accompanied by a strong current of air, while kept quite clear of the fuel. After perfect fusion of the metal in the furnace, the refining proper begins. The metal has to be constantly raked and stirred up by means of a "pall," or long iron bar, and carried towards the air-inlet, so as to allow all portions to become oxidised. A fire bridge separates the material upon the hearth from the fuel, the flame from which reverberates over the hearth. About 4 or 5 cwt. only are generally puddled at a time. The hearth is formed of iron plates protected by "bull-dog," *i.e.*, slag roasted, and thus rendered much less fusible. The fire-grate is nearly as large as the hearth. The furnace is well cased with iron plates. A charge of 4 or 5 cwt. of refined or white forge pig iron, together with 1 cwt. of black oxide of iron (Fe_3O_4) in some form or other is customary at a time. The Fe_3O_4 is obtained from bar iron, and scales off in the rolling. About fifteen minutes after the charge is made, the iron begins to melt,—that is, supposing a previous charge to have been withdrawn, so that the furnace was in a heated condition when the latter charge was thrown in. The oxygen in the air which is applied, deprives the cast-iron of part of its carbon, and at the same time converts the silicon into silica, which combines with some of the oxide of iron to form a fusible slag that can be run off. The removal of the carbon in the iron causes it to become less fusible, and clotted lumps or balls are formed, of about 60 lb. near the grate, which are removed by the puddler, and at once placed in a mechanical squeezer, or under a steam or tilt hammer. The squeezing and hammering processes differ from each other, inasmuch as in the former the mass is shaped by simple pressure, the ball of metal being turned over, between each lifting up of the squeezer anvil, whereas in the latter case the object is attained by the impact of a descending hammer, the blows from which consolidate the particles, and force out any cinder that it may contain, quite as easily as water can be squeezed out of a sponge. The labour of puddling is considerably reduced by the introduction of rotatory furnaces, and other recent ingenious improvements. Care must be taken to prevent the more highly carburised metal descending to the bottom in the furnace, before all the metal is sufficiently refined. Being the more fusible portion of the mass, it is apt to settle and solidify at the base of the furnace, unless broken up and submitted to the action of the blast. The malleable mass forms now what is technically called "a bloom," and having been well welded by the force of the hammer, or the action of the squeezer, is ready to be rolled into definite shapes. The puddled bars are then passed through grooved rollers, diminishing gradually in diameter, by which means the iron is formed into bars, plates, angles, or any open section required. The rollers work in opposite directions, thus producing great compressibility. Cinder-iron is an inferior metal resulting from the slag of the puddling furnace, and contains a large proportion of the phosphorus and sulphur, which have been extracted by the hot blast in the production of the superior iron. When iron is smelted from the ore only, it is called "mine iron." Iron spoken of as "hot-blast, all mine," implies that no cinder-iron or admixture of slag has been employed in the manufacture. Iron which has passed through the rolls as No. 1 quality, has to be again treated to become equal to No. 2 quality. No. 1 can be used for railway iron, but would not do for axles. Each bar has to be cut into short lengths by huge shearers, say into bundles of four, which are raised to a red heat by a mill or re-heating furnace, and are then rolled into a single bar forming No. 2, or merchant bar. In the puddling furnace, the air passed through the grate becomes de-oxidised before it reaches the hearth.

Appointment.—Mr. G. T. Burdett, who was assistant to the late Mr. J. G. Hall, C.E., City Surveyor of Canterbury, has been appointed Assistant Surveyor to the Reigate Local Board. There were 141 applicants for the appointment.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

1,024, Indicator and Fastenings for Doors. A. Illidge.

This invention is connected with devices previously patented by the same person for similar purposes. The most striking feature is the combination of a horizontal sliding bolt, with a vertical sliding indicator. This bolt is capable of being moved from the outside if required, or of being partially or wholly actuated from outside or inside at will. The indicating mechanism is specially elaborate. A tumbler engages with a push-piece or handle, and slides the indicator up or down as the bolt is moved backward or forward.

2,912, Stove Grates. J. Barber.

The object of this invention is to enable the heat of the fire to be radiated into the room, and controlled as desired. A radiating plate is fixed somewhat after the manner of the register in a stove. It is hinged at the base, and falls forward so as to deflect the upward rays from the fire downward into the room. In this radiator slots are made for the escape of the smoke, and these may be opened or shut by a back plate sliding in grooves, and when the fire is not required, the radiator is shut down so as to prevent dirt from entering the room; but when ventilation is desired, the sliding plate is drawn on one side, and the ventilating slots left open.

3,118, Basins or Pans for Water-closets. T. W. Twyford.

According to this invention, the interior surfaces of the main outlets and the parts of the pan leading to them are fluted or corrugated, to prevent paper, &c., from adhering to the sides.

3,161, Spring Bow Dividers. F. O. Fergusson.

By this invention, a little cup, with a milled outside edge, is fixed on the top of the dividers, the handle passing through the base of the cup, and, being riveted or clamped on to the other side. The cup is held by the finger and thumb of one hand, while the rest of the instrument is revolved and operated in the usual way.

3,165, Drain Pipes. J. H. Rose.

The two ends of the pipes made according to this invention are shaped alike with conically bevelled flanges at each end. The pipes are laid on invert blocks, and the system affords special facilities for the removal and renewal of any single lengths of pipe, and the most effective method of jointing.

11,410, Draughtproof Doors, &c. J. C. Reid.

According to this invention, the frame or casing to which one side of the door is hinged is provided at the opposite side and on the top and bottom with a sliding sash placed flatwise against the inner sides or surfaces of the casing. The lath (which stops the draught) is provided with two or more metal slots, through each of them is passed a stud screwed into or otherwise firmly attached to the casement. Between the fixed stud and one end of the slot is a small spring which keeps the lath pressed forward beyond the edge of the casement rebate against which the door closes. Before the door is completely closed it presses against the front edges of the sliding lath, and forces back the lath, compressing the springs. The lath or laths are thus kept pressed against the door so long as it is closed. The edges and underside of the lath are covered with cloth so as to make the join tight.

13,688, Bricks, Tiles, &c. H. Gross.

The object of this invention is to treat bricks, tiles, &c., whilst in the burning kiln in such a manner that they are rendered less porous, harder, more durable, and of a better colour than when the clay is burnt and allowed to cool in the ordinary way. The kiln is made air-tight after the bricks are burnt to the ordinary hardness, and tar or creosote diluted is injected into the bottom of the kiln, allowing the vapour therefrom to permeate the bricks till cool. The contents of the kiln are made more agreeable in colour, much harder, and less porous than when they are left to cool in the usual way.

16,349, Building Blocks. A. Spiess.

The blocks which are the subject of this invention serve chiefly as a substitute for sandstone, and are made from furnace slag conducted while in a liquid state through channels which have gratings fixed at their ends to keep back impurities. The slag is run into moulds of wrought or cast iron coated with a layer of loam or clay. The blocks thus formed are of great durability and capable of resisting fire.

NEW APPLICATIONS FOR PATENTS.

Jan. 27.—1,236, T. Robinson, Feed Motion for certain Wood Planing Machines.—1,238, J. Anderson, Water Closets.—1,255, J. Kaye, Bolting and Unbolting Doors, Windows, &c.—1,258, F. Gibbons, Night Latches for House Doors.—1,272, P. Hubert, Water Closets.

Jan. 28.—1,294, J. Cliffe, Fibrous Asphalt Composition for rendering Concrete Roofs, Arches, Walls, &c., Water and Damp Proof.—1,295, R. Harrison, Opening, Closing, and Adjusting Fanlights, Sashes, &c.—1,305, J. Howie, Flushing Cisterns for Water Closets, &c.

Jan. 30.—1,373, J. Dittrich, Ventilating or Chimney Cowls, &c.—1,389, O. Erfurth, Holder or Support for Scaffolding.—1,394 and 1,395, C. Heaton, Ornamental Work for Walls, &c.

Jan. 31.—1,425, W. Payne, Pivoting Fanlights.—1,442, W. Baird, Flushing Water Closets, &c.—1,446, L. Vojáček, Centrifugal Pumps and Ventilators.

Feb. 1.—1,480, G. and C. Duffy, Window and Door Fasteners.—1,484, R. Holmes and B. Sugden, Weather Bars or Draught Excluders, for Doors or Hinged Windows.—1,496, J. Truscott, Automatic Safety Bolt.—1,507, R. Adams, Springs for Doors, and Checks for Preventing Slamming.—1,515, C. Eissner, Machines for Cutting Clay for Making Bricks, Tiles, &c.

Feb. 2.—1,537, J. Bury, Draught Excluders for Doors.—1,543, C. Homer, Opening, Closing, and Fastening Fanlights, &c.—1,570, W. and W. H. Cowan, Flushing Cisterns.

PROVISIONAL SPECIFICATIONS ACCEPTED.

4,204, W. Hayhurst, Cramps for Carpenters, Joiners, &c.—16,508, T. Switzer, Water Waste-preventers.—16,901, J. McCrossan, Combination Bolt and Latch.—16,997, H. Parker and A. Winder, Water-closet Cisterns.—17,919, D. Heys, Balancing Weights for Windows, Doors, and Shutters.—17,933, R. Garner, D or Gully Trap.—85, J. Wilks, Mining, Tunnelling, and Quarrying Tools.—252, W. Green, Hydraulic Lifts.—284, M. Adams, Floor Tiles.—331, H. McKibbin, Window Frames or Sashes.—372, W. Gibbs, Glazing.—403, W. Sanday, Cutting and Shaping Wood.—537, E. Tonks and G. Burden, Fastener for Window Sashes, &c.—679, J. Haley, Glass Tiles, &c.—738, H. Smart, Fittings for Hydrostatic Ventilating Apparatus.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

2,817, H. Moore, Self-locking Bolts for Doors, &c.—6,631, L. Sunter, Screws.—6,741, J. Klif, Squares, &c., for Carpenters, Stair Builders, &c.—13,634, W. Day and G. Dimmer, Water Waste-preventer Syphon Flushing Cistern.—16,858, J. Smith, Ventilating and Disinfecting Sewers, House Drains, &c.—17,503, G. Cook, Spirit Levels.—17,852, W. Thompson, Apparatus for Air Moistening and for Ventilation.—95, A. Von Csóka, Bars for Protecting Windows, &c.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

JANUARY 23.

By A. CHANCELLOR.

Mortlake—The residence called Sheen Vale House, freehold	£820
Twickenham, Richmond-road—Copyhold house and shop	320
Amyand Villa, 66 years, ground-rent 5*l.*	370
Three copyhold cottages	450
Copyhold house and shop	210
Market garden land, 1a. 2r. 37p. copyhold	810
12, Amyand-terrace, 75 years, ground-rent 5*l.*	260
The Workmen's Coffee Rooms, 66 years, ground-rent 5*l.*	370
Richmond, Ormond-road—Lissoy Cottage, freehold	395
13 and 14, Princes-road, freehold	510
Barnes, Railway Side—The Beehive beerhouse, freehold	340
Mortlake—Hinton Cottage, and Cottage in rear, freehold	280

JANUARY 27.

By T. G. WHARTON.

Sittingbourne—Freehold land, 6a. 3r. 3p.	1,800

JANUARY 30.

By A. BAKER & SONS.

Harrow—Twenty-one plots of freehold land	917

JANUARY 31.

By SAML. B. CLARK & SON.

Chelsea—29, Limerston-street, 62 years, ground-rent 5*l.*	350

By GREEN & SON.

Barnes—14 and 15, High-street, and Cottage, freehold	1,000
Wandsworth—50 and 52, Tonsley-hill, 87 years, ground-rent 10*l.*	355
Nos. 41, 43, and 45, Alma-road, 87 years, ground-rent 15*l.*	615
Hammersmith—1 and 3, Mall-road, 77 years, ground-rent 14*l.*	610
Nos. 46 and 48, Mall-road, 77 years, no ground-rent	765
Turnham Green, Elliott-road, Braemar Lodge, freehold	500
Bedford Park—Ground-rent of 26*l.*, reversion in 81 years	655

By FAREBROTHER, ELLIS, CLARK, & Co.

Vauxhall, Nine Elms-lane—A plot of freehold land, 26,300 ft.	3,400
Marylebone—2, Blandford-place, 21 years, ground-rent 10*l.*	465
Hampstead-road—107, Stanhope-street, 36 years, ground-rent 7*l.* 10s.	515
Euston-road—49, George-street, 23 years, no ground-rent	560

By JOHN LEES.

Reigate, Croydon-road—Nineteen plots of freehold land	1,428
North Albert-road—Four plots of freehold land...	214

FEBRUARY 1.

By C. WILSON.

Kentish Town-road—The letting of eight plots of building land for 80 years realised 25*l.* per year.	

By PHILLIPS, LEA, & DAVIES.

Hackney—37 and 39, Brunswick-street, 57 years, ground-rent 4*l.* 10s.	270
Nos. 41 to 55, odd, Brunswick-street, 61 years, ground-rent 18*l.*	1,090

By A. & A. FIELD.

Commercial-road—21 and 23, Harding-street, and a ground-rent of 5*l.*, term 25 years, ground-rent 10*l.*	280

By F. JOLLY & Co.

Stepney—70 and 72, Harford-street, 75 years, ground-rent 10*l.*	£380

By JONES & SON.

Poplar—25, Canton-street, 48 years, ground-rent 3*l.*	355
Leytonstone, Drayton-road — Ventnor House, freehold	700
Talbot and Mulgrave Houses, freehold	1,410

By SHERRIN & COLTMAN.

Brockley—2 to 7, Vulcan-terrace, freehold	1,910
Kentish Town—12, 14, and 16, Kelly-street, 49 years, ground-rent 12*l.*	800

FEBRUARY 2.

By NEWBON & HARDING.

Clerkenwell—39, 40, 41, and 42, Clerkenwell-green, freehold	2,350
No. 51, Clerkenwell-close, freehold	700
No. 17, Red Lion-street and Factory, freehold	1,245
Finsbury Park—103, Woodstock-road, 79 years, ground-rent 6*l.* 10s.	245
No. 23a, Woodstock-road, 79 years, ground-rent 7*l.*	255
Islington—34, Dean-street, 38 years, ground-rent 5*l.*	295

FEBRUARY 3.

By MURRELL & SCOBELL.

Newington—185, 187, 189, and 191, Newington Butts, and 1, Waterloo-place, 13 years, ground-rent 42*l.*	1,350
Nos. 2 to 19, Waterloo-place, 13 years, ground-rent 38*l.*	650
Borough—21 to 25, Falcon-court, 32 years, ground-rent, 45*l.*	70
Southwark-street—19, Prices-street, copyhold	165

By HUMBERT, SON, & FLINT.

Lower Norwood—7, High-street, freehold	640
No. 5, High-street, 84 years, ground-rent 10*l.*	250

MEETINGS.

SATURDAY, FEBRUARY 11.

Surveyors' and Auctioneers' Clerks' Provident Association.—Annual General Meeting, Auction Mart. 3 p.m.

National Smoke Abatement Institution.—Mr. Alfred E. Fletcher, F.C.S., on "Town Smoke and House Warming" (Society of Arts' Hall, 8 p.m.).

Edinburgh Architectural Association.—Visit to Ravelston and Craigcrook."

MONDAY, FEBRUARY 13.

Royal Academy.—Mr. Alfred Gilbert, A.R.A., on "The Arts immediately dependent on the Plastic Art," I. 8 p.m.

TUESDAY, FEBRUARY 14.

Institution of Civil Engineers.—Mr. J. Pierce, jun., M.A., on "The Economic Use of the Plane-Table in Topographical Surveying." 8 p.m.

Society of Arts (Applied Art Section).—Mr. H. B. Wheatley, F.S.A., on "The Principles of Design as Applied to Bookbinding." 8 p.m.

Liverpool Architectural Society.—Mr. Walter Emden, on "Theatres and Public Buildings, and their Arrangements for Public Safety." 7 p.m.

Museum of Archæology, Cambridge.—The Rev. G. F. Browne, B.D. (Disney Professor), on "Sculptured Stones of pre-Norman Type in the British Islands," III. 2·30 p.m.

WEDNESDAY, FEBRUARY 15.

British Archæological Association.—Dr. Walker on "The Discovery of a Bronze Equestrian Figure near Peterborough." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—8·30 p.m.

THURSDAY, FEBRUARY 16.

Royal Academy.—Mr. Alfred Gilbert, A.R.A., on "The Arts immediately dependent on the Plastic Art," II. 8 p.m.

Institute of Builders.—Mr. F. J. Dove on "The Relation of the Architectural Profession to the Building Trade." 7 p.m.

Society of Arts.—Professor Hubert Herkomer, A.R.A., on "Etchings and Mezzotint Engravings." 8 p.m.

Parkes Museum.—Dr. J. F. Payne, on "Plagues, Ancient and Modern." 5 p.m.

Society of Antiquaries.—8·30 p.m.

FRIDAY, FEBRUARY 17.

Architectural Association.—Mr. W. H. Bidlake, M.A., on "A Botanical Contribution to Architecture." 7·30 p.m.

SATURDAY, FEBRUARY 18.

Architectural Association.—Visit to the Great Northern Hospital, Holloway-road. (See advt. on first page.)

Miscellanea.

Technical Education.—We are asked to mention that, in consequence of the great interest shown in the Conference on Technical Education, held at the Royal Victoria Hall, Waterloo Bridge-road, on the 14th December, another has been arranged for the 15th inst., at 8 p.m., when Captain Sir Douglas Galton, K.C.B., will take the chair. At the first meeting a resolution in favour of technical education was carried unanimously, and now the subject for discussion is, what is the best way of obtaining it. All seats will be free, but intending speakers should send in their names to Miss Emma Cons, the hon. sec., before the day of meeting.

London and County Banking Company (Limited).—The balance-sheet adopted at the annual general meeting of this company, held on the 2nd inst., shows (as will be seen by an advertisement on our back page) an available balance of profit on the business of the half-year ending Dec. 31st last of 222,134*l.* 7s. 8d. (including 19,000*l.* odd balance brought forward from last account). The directors recommended the payment of a dividend of 10 per cent. for the half-year, making, with the 10 per cent. paid for the previous half-year, a dividend of 20 per cent. for the year 1887.

The Alexandra Palace.—Another effort is being made to revive the fortunes of the Alexandra Palace, which has been subject to so many adverse vicissitudes. A new company under the title of the Alexandra Park and Palace Company has just been formed, having for its objects, in the first instance, the leasing of the palace and grounds, with the view of again opening them as a place of recreation for the public. It appears that the company have obtained terms for the acquirement of the palace and grounds which seem to be of an exceptionally favourable character. The London Financial Company, who are the owners of the palace, propose to let to the new company the whole of the park and grounds, together with the palace buildings, for a term of seven years, at a percentage on the gross takings, the first year's tenancy being free until the receipts reach 30,000*l.*, and afterwards a rental of five per cent. on all receipts above that amount. The new company is also to have the option, during the seven years' lease, of purchasing the entire freehold of the park, 145 acres in extent, together with the grove, the palace buildings, including the organ and all other appurtenances, for the sum of 150,000*l.*, which is stated to be 30,000*l.* less than the property has ever yet been offered at. If the land alone is taken into consideration, this sum represents little more than 1,000*l.* an acre, whereas, land in the immediate neighbourhood, for building purposes, has been sold, within the last few years, for as much as 1,200*l.* and 1,500*l.* an acre; whilst, in view of its original cost, the value of the palace itself is estimated at not less than 100,000*l.* For their present purposes the newly-formed company propose to raise 20,000*l.*, in shares of 1*l.* each, and the intention is to reopen the palace in May next. In the mean time there is a counter project, under which it is proposed that the whole of the property should be at once purchased as a place of public recreation, by a rate levied on the inhabitants of the various parishes around, who ought to save it from the hands of the builder.

Leeds and Yorkshire Architectural Society.—A special business meeting of this society was held on the 2nd inst., for the purpose of considering the "Architects, Engineers, and Surveyors Registration Bill." The meeting was largely attended by architects from various parts of the country. Up to now the Society has steadily declined to assist the committee who have charge of the Bill now before the profession, in hopes that the Institute would take up the question of the legal registration of architects. The decision of this body being still deferred, it was considered that the time has passed for reliance to be placed on any support from its Council; and after some discussion it was unanimously decided to petition Parliament in favour of the Bill now in charge of Colonel Duncan, C.B., M.P. A grant from the funds of the Society was also made towards the expenses incurred in the promotion of the measure. A committee was appointed to watch the course of the movement and to organise such proceedings as might be found desirable in furthering its success. In doing so, the Leeds and Yorkshire Society have made, in our opinion, a very ill-judged step, and one very disloyal to the central representative body of the Profession, and have played into the hands of people who do not represent the Profession, and do not deserve its confidence.

The Imperial Stone Company.—At the fifth annual general meeting of the shareholders of the Imperial Stone Company, Limited, held on Friday, February 3rd, at Sussex House, 52, Leadenhall-street, London, Mr. John Andrew Anderson, Chairman of the Company, presiding, the report and accounts were adopted, and a dividend of 5 per cent. per annum and a bonus of 2s. 6d. per share declared. The chairman congratulated the shareholders on the increase of the business of the Company during the past year. The retiring directors were re-elected, and a vote of thanks to the chairman closed the proceedings.

Conservative Club, Wigan.—A new Conservative Club is being erected in Market-street, Wigan, by Mr. F. S. Powell, M.P. for the borough, from designs by Mr. George Heaton, architect, of the same town. The builder is **Mr. John Preston**, and the cost will be about 5,000*l.*, exclusive of the cost of the land.

The Berlin Waterworks.—Owing to the yearly increasing consumption of water at Berlin, steps are being taken by the waterworks committee of the Berlin municipality for the erection of additional waterworks. It is proposed to erect new works on the north shore of the Müggelsee, large enough to furnish, together with the existing works at Charlottenburg and Tegelu, a water-supply for 2¼ million inhabitants, reckoning about 23 gallons per head per day all the year round. The ground needed for the new works at the lake-shore will cover an area of 11 acres, whilst 67 acres are wanted for the principal works. It is contemplated to construct four independent filtering works, each with eleven filter beds and a pure-water reservoir. The Müggelsee station is to supply 382,000,000 gallons of water in the twenty-four hours. The Berlin municipality will shortly be called upon to vote 200,000*l.* for the construction of the Müggelsee station.

The Institute of Builders.—At a meeting of this Institute to be held at seven o'clock on Thursday next, February 16th, at No. 31, Bedford-street, Strand, W.C., a paper will be read by Mr. Frederick J. Dove, on "The Relation of the Architectural Profession to the Building Trade."

PRICES CURRENT OF MATERIALS.

	£.	s.	d.	£.	s.	d.
TIMBER.						
Greenheart, B.G. ....ton	6	10	0	7	15	0
Teak, E.I. ....load	8	0	0	12	10	0
Sequoia, U.S. ....foot cube	0	2	3	0	3	0
Ash, Canada ....load	3	0	0	4	10	0
Birch ,, ...	2	0	0	3	10	0
Elm ,, ...	3	10	0	4	10	0
Fir, Dantsic, &c.	1	10	0	4	0	0
Oak ,, ...	2	10	0	4	10	0
Canada	3	0	0	6	0	0
Pine, Canada red	2	0	0	3	10	0
,, yellow	2	0	0	4	0	0
Lath, Dantsic ....fathom	3	0	0	5	0	0
St. Petersburg	4	0	0	5	10	0
Wainscot, Riga ....log	0	0	0	0	0	0
,, Odessa, crown....	2	10	0	3	0	0
Deals, Finland, 2nd and 1st...std.100	7	10	0	9	0	0
,, 4th and 3rd	6	0	0	8	0	0
Riga	5	10	0	7	10	0
St. Petersburg, 1st yellow	8	10	0	14	0	0
,, 2nd ,, ...	7	0	0	8	0	0
,, white	6	10	0	8	10	0
Swedish	6	15	0	15	0	0
White Sea	7	0	0	16	10	0
Canada, Pine, 1st	16	0	0	24	0	0
,, ,, 2nd....	10	0	0	15	10	0
,, ,, 3rd, &c....	7	0	0	9	10	0
,, Spruce, 1st	8	0	0	9	10	0
,, ,, 3rd and 2nd	5	0	0	7	0	0
New Brunswick, &c....	5	0	0	7	0	0
Battens, all kinds	4	0	0	10	10	0
Flooring Boards, sq., 1 in., prepared, First	0	8	0	0	11	6
Second	0	6	6	0	7	6
Other qualities	0	4	0	0	6	0
Cedar, Cuba ....foot	0	0	3½	0	0	3½
Honduras, &c.	0	0	3	0	0	3½
Australian	0	0	2	0	0	3
Mahogany, Cuba	0	0	4½	0	0	7
St. Domingo, cargo average	0	0	4½	0	0	6
Mexican ,, ...	0	0	3½	0	0	3½
Tobasco ,, ...	0	0	4	0	0	5
Honduras ,, ...	0	0	4	0	0	5
Maple, Bird's-eye ,, ...	0	0	5	0	0	7
Rose, Rio ....ton	8	0	0	11	0	0
Bahia....	7	0	0	9	0	0
Box, Turkey	5	0	0	12	0	0
Satin, St. Domingo ....foot	0	0	5	0	0	9
Porto Rico	0	0	6	0	0	10
Walnut, Italian	0	0	4	0	0	5½
METALS.						
IRON—Bar, Welsh, in London...ton	0	0	0	0	0	0
,, ,, in Wales	0	0	0	0	0	0
,, Staffordshire, London	0	0	0	0	0	0
COPPER—						
British, cake and ingot ....ton	77	0	0	78	0	0
Best selected	79	0	0	80	0	0
Sheets, strong....	90	0	0	0	0	0
Chili, bars	76	10	0	78	0	0
YELLOW METAL....lb.	0	0	7½	0	0	0
LEAD—						
Pig, Spanish ....ton	14	15	0	15	0	0
English, common brands....	0	0	0	0	0	0
Sheet, English	16	0	0	16	5	0
SPELTER—						
Silesian, special ....ton	19	5	0	19	10	0
Ordinary brands....	18	15	0	19	0	0
TIN—						
Straits....ton	176	10	0	0	0	0
Australian	170	10	0	0	0	0
English ingots	164	0	0	0	0	0
OILS.						
Linseed ....ton	19	0	0	19	5	0
Cocoanut, Cochin	28	0	0	29	0	0
Ceylon	24	10	0	0	0	0
Palm, Lagos	22	0	0	0	0	0
Rapeseed, English pale	25	15	0	26	0	0
,, brown	24	5	0	24	10	0
Cottonseed, refined	20	15	0	0	0	0
Tallow and Oleine....	25	0	0	45	0	0
Lubricating, U.S....	5	0	0	6	0	0
,, refined....	5	0	0	12	0	0
TURPENTINE—						
American, in casks ....cwt.	1	9	6	0	0	0
TAR—						
Stockholm ....barrel	0	15	0	0	15	6
Archangel	0	10	0	0	10	6

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Offices	Swindon (N.T.) Local Bd	Not stated	March 20th	i.
Plans and Sections, Drainage System....	N. British Plumbing Co	7*l.* 7*s.*	Not stated ...	x.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Works and Materials	Willesden Local Board	O. Claude Robson....	Feb. 14th	ii.
Works and Materials	Kingston Highway Brd.	A. J. Henderson	Feb. 15th	ii.
Road Materials, Royal Parks....	Com. of H.M. Works...	*Official*	do.	ii.
Carrying away Slops and Rubbish	Lambeth Vestry	H. McIntosh....	Feb. 16th	x.
Works and Materials	do.	do.	do.	x.
Timber	Great Western Ry. Co.	*Official*	Feb. 17th	ii.
Works and Materials	Hornsey Local Board ...	T. De Courcy Meade ...	Feb. 20th	x.
Wrought-Iron Fencing	do.	do.	do.	x.
Road-making Works, Loughborough	Trustees Storer's Charity	W. E. Woolley....	do.	ii.
Pavior and Masons' Work	St. Saviour's Dis. B. of W.	*Official*	Feb. 21st	x.
Sewer and Drainage Work....	do.	do.	Feb. 22nd	x.
Road-making and Paving Works	Fulham Vestry....	J. P. Norrington	do.	x.
Wire Fence, &c....	Kingston-on-Thms. Cor.	*Official*	do.	x.
Gas Fitters' Work....	Com. of H.M. Works...	do.	do.	x.
Scavenging, Watering, Paving, &c....	St. Leonard, Shoreditch, Vestry	do.	do.	ii.
Works and Materials	St. Mary (Islington) Ves.	do.	Feb. 23rd	x.
Rolled Iron Joists and Girders....	Cambridge County Lunatic Asylum....	do.	Feb. 24th	x.
Works and Materials	St. Leonard, Shoreditch, Vestry	R. R. R. Standing....	Feb. 25th	x.
Barging away Slop and Refuse	Wandsworth Bd. of Wks	*Official*	Feb. 28th	x.
Pipe Sewers, Manholes, Ventilators, &c.	West Bromwich Cor....	do.	do.	x.
Pauper Lunatic Asylum, Plymouth	Com. of Justices	J. T. Rayrs....	do.	ii.
Stoneware Sewer-Pipes and Gully Traps	Bath U. S. A.	Hine & Odgers....	March 2nd	x.
Works and Materials	Bermondsey Vestry....	C. R. Fortune	March 5th	ii.
Works at Sanitary Depot	Hornsey Local Board...	*Official*	do.	x.
Public Baths	Battersea P. B. & W. Com.	T. De Courcy Meade ...	do.	x.
Excavation and other Works	Brighton Metropole Htl.	Rowland Plumbe, &c....	Not stated...	ii.
		A. Waterhouse	do.	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page
Borough Engineer and Surveyor	Dover Town Council ...	300*l.*, &c.	Feb. 13th	xiv.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *Noon on Thursdays.*]

BATTERSEA.—For alterations to and enlargement of the Junior School, Battersea, for the Building Committee of the Royal Masonic Institution for Girls. Mr. Hunt, architect. Quantities by Messrs. Hovenden & Berridge :—

Maxwell Bros.	£2,549 0 0
Wilkes Bros.	2,499 0 0
W. Downs	2,480 0 0
Prestage	2,453 0 0
Gregory	2,437 0 0
W. Shurmur	2,384 0 0
Nightingale (accepted)	2,377 0 0

BETHNAL GREEN.—For erecting a new house for the schoolkeeper of the Cranbrook-road School, Bethnal Green (Hackney O[1]), for the School Board for London. Mr. T. J. Bailey, architect :—

G. R. Earsdon	£576 0 0
W. A. Rhodes	430 0 0
Hale & Twitchen	410 0 0
J. W. Roy	406 0 0
S. Sabey & Son....	398 0 0
J. Webb....	359 0 0
Norris & Luke	349 0 0
Simmonds Bros.*....	349 0 0
E. Lake	309 0 0

* Recommended by the Works Committee for acceptance.

BIRMINGHAM.—For supplying and fixing, at the new Skin and Lock Hospital, John Bright-street, the hot-water heating apparatus, also cold water supply, hot-water circulation for baths, &c., fire hydrants, and disinfecting closets and drying-rooms. Messrs. James & Lister Lea & Son, architects, Cannon-street, Birmingham :—

Henry Hope, Birmingham (accepted) £473 0 0

BISHOP'S STORTFORD.—For building boundary wall to enlarge the cemetery, for the Bishop's Stortford Burial Board :—

J. Nicholls....	£270 0 0
Franklin Bros....	266 0 0
Champness....	227 0 0
Handscomb Bros....	215 10 0
Glasscock & Son	215 0 0
W. Cornwell	198 0 0
H. Glasscock (accepted)	197 10 0

[All of Bishop's Stortford.]

DARTMOUTH.—For the erection of a boarding-house, on the New Embankment, Dartmouth, for the Dartmouth Coffee Tavern and Temperance Company (Limited). Mr. E. H. Bach, architect. Quantities supplied by the architect :—

Maunder & Veale....	£1,717 6 0
Row & Grant (accepted)	1,478 0 0
Henry Winsor	1,473 0 0

[All of Dartmouth.]

[Architect's estimate, 1,503*l.*]

CHESTER.—For alterations and additions to premises in Foregate-street, for Mr. A. Bradley. Messrs. John H. Davies & Son, architects, Northgate-chambers, Chester. Quantities supplied by the architects :—

	Contract No. 1.	Contract No. 2.	Total.
G. Welsh	£324 5 6	... £330 17	... £655 2 6
E. Jones	360 0 0	... 293 0	... 653 0 0
W. Dutton ...	296 0 0	... 354 0	... 650 0 0
W. W. Freeman	310 0 0	... 328 0	... 638 0 0
G. Forester ...	298 0 0	... 338 0	... 638 0 0
W. Parrott ...	292 10 0	... 327 10	... 620 0 0
T. Browne ...	288 0 0	... 311 0	... 599 0 0
J. Mayers* ...	286 13 0	... 299 10	... 586 3 0

[All of Chester.]

* Accepted

HORNSEY.—For stabling, cart-sheds, &c., for the Hornsey Local Board. Mr. T. de Courcy Meade, engineer and surveyor :—

Cook & Co....	£1,682 0 0
Beaves Bros.	1,525 0 0
Dunmore....	1,502 0 0
Mowlem & Co.	1,471 0 0
Kerry	1,450 0 0
Tester	1,440 0 0
Hurley....	1,424 0 0
Tout....	1,384 0 0
C. Wall	1,367 0 0
Dixon	1,367 0 0
Marshall	1,367 0 0
E. C. Howell & Co....	1,335 0 0
Hunt	1,320 0 0
W. Shurmur	1,312 0 0
Williamson....	1,296 0 0
W. M. Dabbs....	1,294 0 0
Robinson....	1,259 0 0
Willmott....	1,217 0 0
D. Brown....	1,169 0 0
Reynolds	1,125 0 0
	1,091 0 0

KINGSLAND.—For the erection of Synagogue, Birkbeck-road, Kingsland. Messrs. T. Chatfeild Clarke & Son, architects :—

J. Outhwaite	£2,273 0 0
B. E. Nightingale....	2,233 0 0
Paine Bros....	1,932 0 0
G. J. Hoskins....	1,835 0 0
E. Lawrence & Sons	1,741 0 0
Jackson & Todd	1,679 0 0
McCormick & Sons	1,629 0 0
W. M. Dabbs....	1,585 0 0
W. Shurmur	1,575 0 0
S. Goodall	1,484 0 0

KINGSTON-ON-THAMES.—For alterations, &c., at Eden Lodge, for Mr. A. Copping. Mr. T. C. Barralet, surveyor, Bridge-chambers, Richmond :—

Gaze (accepted)	£145 0 0

KINGSTON-ON-THAMES.—For the erection of class-rooms, &c., for the Kingston and Surbiton Branch of the Young Men's Christian Association, at Kingston-on-Thames. Mr. Rutland Saunders, architect. Messrs. Northcroft, Son, & Neighbour, surveyors, 57, Charing-cross:—

Henley & Sons, Norbiton	£1,698	0	0
Dedwell, Hornsey	1,678	14	5
Charles Wall, Chelsea	1,627	0	0
Oldridge & Sons, Norbiton	1,493	0	0
Havell, Kingston-on-Thames	1,475	0	0
Snelling, Kingston-on-Thames	1,445	0	0
Joseph Higgs, Norfolk-square	1,387	0	0
Constable & Son, Hampton Wick	1,378	0	0
Judd, Kingston	1,122	0	0

LAMBETH.—For altering the existing water-closets and urinals, providing new urinal for the boys, and new water-closets for the girls and infants, of the Harper-street School, New Kent-road (East Lambeth A), for the School Board for London. Mr. T. J. Bailey, architect:—

A. Jeffrey & Co.	£376	12	0
Davis Bros.	363	0	0
J. W. Roy	318	0	0
W. Johnson	300	0	0
W. F. Russell	295	0	0
King Bros. & Co.	279	0	0
T. Bendon*	278	10	0

* Recommended by the Works Committee for acceptance.

LAMBETH.—For extending the present corridor in the boys' department of the Larkhall-lane School (West Lambeth X), for the School Board for London. Mr. T. J. Bailey, architect:—

H. Mallett	£120	0	0
B. E. Nightingale	112	0	0
Lathey Bros.	103	0	0
W. Johnson	97	10	0
Holloway Bros.*	89	0	0

* Recommended by the Works Committee for acceptance.

LONDON.—For alterations and fitting up of the Ivanhoe Restaurant, 78, Wood-street, City, for Messrs. Jones & McDaniel:—

W. Rendel (accepted)	£445	0	0

PECKHAM.—For the enlargement of the Woods-road School, Peckham (East Lambeth Y), by 200 places, for the School Board for London. Mr. T. J. Bailey, architect:—

L. Bottoms	£3,058	0	0
Scharien & Co.	2,851	0	0
J. W. Bunning & Son	2,848	0	0
T. Bendon	2,692	0	0
J. Ford & Sons	2,677	0	0
W. H. Lorden & Son	2,649	0	0
J. Marsland	2,625	0	0
J. & C. Bowyer	2,538	0	0
H. Hart	2,484	0	0
Kirk & Randall	2,483	0	0
W. Johnson	2,398	0	0
C. Wall	2,388	0	0
H. L. Holloway	2,383	0	0
Stimpson & Co.	2,380	0	0
W. Downs	2,356	0	0
Norris & Luke	2,226	0	0
J. O. Richardson*	2,161	0	0

* Recommended by the Works Committee for acceptance.

Alterations at Turk's Head, East-street, W.C.—The architect writes to say that no "decoration" is included in the estimates sent in (see p. 94, *ante*), which were mainly for structural repairs.

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WILLIAM WHITELEY, Westbourne Grove,
London, Oct. 12th, 1887.

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(*Signed*) WILLIAM WHITELEY.

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